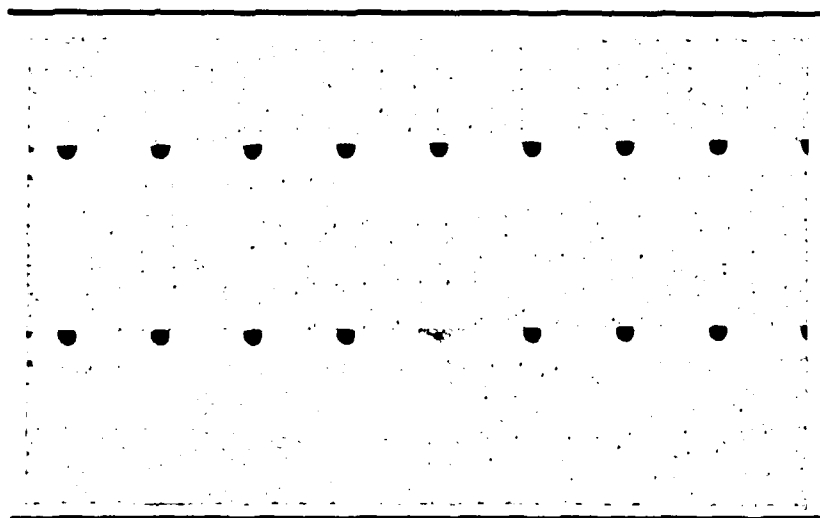


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THE NAVY ENLISTMENT FIELD MARKETING EXPERIMENT

VOLUME V

THE WHARTON-ADMINISTERED

NAVY TRACKING SURVEY:

PRE-INTERVENTION RECRUITING ENVIRONMENT

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studies. The cross-sectional view of the recruiting process leads to insights into its mechanisms.. Complete tabulations of the collected data are appended.

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EXECUTIVE SUMMARY

The data on which this Volume is based were collected in June, 1979, prior to experimental intervention. Studied were twelve "Areas of Dominant Influence"--defined advertising market areas. Almost 4,000 respondents participated, including 17 to 21 year-old men and 17 to 24 year-old women in the general, "at-large" population, and participants in various stages of the Navy recruiting process.

Some significant findings are these:

- For all examined segments of the population, the proportion of participants in the Navy recruiting cycle who report themselves both out-of-school and out-of-work increases at each step in the process. In the surveyed target population, 19 percent fall into this category; 38 percent of those seeing recruiters report themselves out-of-school and unemployed; among those signing Navy enlistment contracts, 79 percent reported themselves in this group. (Section 3.B)

Since the Navy appears to draw a large portion of its recruits from a relatively small segment of the general population, environmental factors which tend to enlarge the relative proportion of unemployed, out-of-school young people may have a positive effect on accessions. Such factors might include a rise in unemployment rates, or reduced accessibility of student loans.

- In the surveyed at-large population, more than 66 percent of men and 58 percent of women are high school graduates. Of those who see recruiters, 55% of men and 63% of women have finished high school. The proportions for those who sign enlistment contract are 85 percent of men and 93 percent of women. (Sections 1.E and 3.E)
- 23 percent of the men, and 45 percent of the women in the at-large target population have some education beyond high school. Of those who see recruiters, the proportions are 12 percent of men and 10 percent of women. Of those who sign enlistment contracts, just 6 percent of men and 14 percent of women have education beyond high school. (Sections 1.E and 3.E)
- The percentage of respondents who state an intention to "go on to the next step" in the recruiting process is significantly greater in the post-recruiter sample than in the pre-recruiter sample. The effect is stronger for men than for women. The AFEES experience does not similarly affect men's stated intentions, but women sampled afterwards more often state an intention to enlist than those sampled before. (Section 4.C)

- Recall of military advertising is uniformly strong throughout the at-large sample, averaging about 80 percent. It is a few percent stronger among men, and somewhat weaker among blacks. (Section 2.A) Whites' and Hispanics' spontaneous recall of Navy advertising is significantly greater than other racial groups'. (Section 2.B)
- Only half as many women as men progress from recruiter contact to AFEES tests; half as many women as men who qualify will sign enlistment contracts. It is not clear whether this results from a discrepancy between women's expectations and their developing impressions of the Navy, or whether there is a mechanism in the recruiting process which tends to discourage women's enlistment. (Section 3.A)
- 77 percent of the men and 73 percent of the women in the surveyed at-large population state that they 'definitely' or 'probably' will pursue additional education. 16 percent of the men and 6 percent of the women state a definite or probable intention to join the armed forces. It is not clear if those who do so indicate are otherwise desirable to the services. (Section 2.G)
- Among the life goals examined, job security and opportunity for self-development are of paramount importance to all investigated population groups. But the military is not perceived as best able to satisfy these goals, and the Navy is perceived as even less helpful. (Sections 2.D, 2.E, 2.F)
- Certain life goals are of increasing importance to respondents at succeeding stages of the recruiting cycle. Among these are: challenging work, leadership, service-to-country, and opportunity to travel. These same goals are relatively unimportant to the target population at large. (Sections 2.D and 4.A)
- Market segments can be derived from life goal importance measures. These segments join the Navy at widely differing rates. (Section 5.C)

INTRODUCTION

The "Wave I" data set is comprised of four parts. A random-digit tele-phone survey, conducted between June 20 and July 20, 1979 by Opinion Research Corporation provides demographic and attitudinal information on the at-large population of 17- to 23-year-old men and women in the markets studied. In the same markets, similar, self-administered, written instruments were completed by potential recruits who visited recruiting stations, who took Naval qualifying tests* or who signed Navy enlistment contracts between June 5 and July 28, 1979. Individuals who had signed enlistment contracts in previous periods, but who had delayed entry into the Navy until the measurement period, also completed the questionnaires. These last three portions of the Wave I study provide similar (if not exactly comparable) data to the telephone survey. It is therefore possible to make general comparisons between the "at-large" population of potential Navy recruits, and those who actually enter the recruiting process. It is possible also to make robust comparisons between the populations in the Navy recruiting process at the various examined points -- and to draw conclusions as a result.

The examination of the Wave I data is divided into several sections. First presented is demographic information obtained through the telephone survey of the "at-large" population of young people. This is followed by an investigation of the advertising awareness of this group, their contact with military recruiters and the recruiting process, and their perceptions of the military and Navy as effective opportunities through which to achieve various career goals. Students of these data should keep in mind both its source

* The "tests" to which this report will often refer are that series of examinations conducted at Armed Forces Entry and Examination Stations (AFEES), including physical examination and Armed Services Vocational Aptitude Battery (ASVAB).

and purpose. Other studies* have obtained similar data from larger samples chosen to allow national projections. The tables presented on the following pages serve to establish the general (if not perfect) similarity of this study's respondents to others, and to provide a base from which later measurements can be used to detect experimentally-induced changes.

It is important to consider also the seasonality of the activities of young people. The study's data were collected near or after the end of a school year; responses concerning education, employment and similar activities are necessarily somewhat different than if obtained at other periods.

Section 3 presents similar demographic information on respondents who are participating in the Navy recruiting process, and identifies differences measured at various points in the recruiting process. A discussion of similar differences in perceptions of military and Navy service then follows in Section 4.

In Section 5 are presented summaries of multivariate analyses of the Wave I data, including factor analysis of respondents' life goals, and two-group discriminant analysis based on stated intentions regarding enlistment.

* For example, Navy Advertising Effectiveness Studies (NAES) and Youth Attitude Tracking Studies (YATS).

SECTION 1: AT-LARGE TARGET POPULATION - DEMOGRAPHICS

A. Sex

Of the 1248 telephone survey respondents, 609 (48.8 percent) are male and 639 (51.2 percent) are female.

B. Age

The age distribution of the sample is presented in Table 1.1

Table 1.1
AGE DISTRIBUTION OF AT-LARGE SURVEY POPULATION

	17	18	19	20	21	22	23	24	Total
Males	29.8%	21.7%	19.9%	14.4%	14.1%	(E X C L U D E D)			100% (609)
Females	17.1	17.5	12.9	11.2	9.4	10.8	11.2	10.0	100% (639)
Females (excluding 22-24)	25.1	25.7	18.9	16.5	13.8	(E X C L U D E D)			100% (435)

It is noted that younger respondents represent a larger proportion of the sample than do older people. It seems likely that the reason for this is the relative difficulty of reaching by telephone young people who have recently left their parents' homes and who have set up their own living arrangements. Such options as college dormitories or shared housing may reduce the number of telephones per individual, compared with the parents' single-family dwelling; this would reduce the number contacted through random-dialing techniques.

C. Race

Table 1.2 presents the racial composition of the telephone sample. The percentage distribution of the male and female groups seems different; the Chi-squared statistic confirms this. But the two racial categories which show the greatest discrepancies are "other" and "refused." It is unclear why more men than women should choose these categories. If they are excluded, and the Chi-squared statistic computed again, no significant variation in racial proportions is found between the surveyed males and females.

Table 1.2

RACIAL DISTRIBUTION OF AT-LARGE SURVEY POPULATION

	<u>Male</u>	<u>Female</u>	<u>Total Sample</u>
White	77.5%	80.9%	79.2%
Black (not Hispanic)	9.4	10.5	9.9
Hispanic	1.8	2.5	2.2
American Indian/ Alaskan Native	5.4	3.8	4.6
Asian/ Pacific Islander	0.7	0.5	0.6
Other	2.5	0.8	1.6
Refused	<u>2.8</u>	<u>1.1</u>	<u>1.9</u>
	100% (609)	100% (639)	100% (1248)

Chi-Squared (whole sample) = 13.79; D.F. = 6; Sig. between .05, .02
 Chi-Squared (excl. "other" & "refused") = 3.27; D.F. = 4; Sig. > 0.2

D. Marital Status

Significantly more women report themselves either "married" or "formerly married" than do men. The distribution is presented in Table 1.3.

Table 1.3.

MARITAL STATUS OF AT-LARGE SURVEY POPULATION

<u>Marital Status</u>	<u>Male</u>	<u>Female</u>	<u>Total Sample</u>
Never Married	91.5%	58.4%	74.5%
Married	7.6%	37.2%	22.8%
Formerly Married	0.8	3.3	2.1
Other	0.2	1.1	0.6
	<u>100%</u>	<u>100%</u>	<u>100%</u>
	(609)	(639)	(1248)

E. Education

Table 1.4 indicates that men in the surveyed age group have a significantly greater likelihood of being in school than do women. On the whole, men are more likely to have completed more education than the surveyed women; see Table 1.5. Following the procedure used in previous Youth Attitude Tracking Studies, an educational quality index is computed. Each of several high school mathematics courses adds a point. Additional points are added for a course covering basic electronics or electricity. Self-reported high school grades are worth further points: A's and B's - 3 points; B's and C's - 2 points; C's and D's - 1 point. The minimum score on this index is 2; the maximum is 10. The scores are presented in Table 1.6. Although women in general complete fewer years of school than do men, the academic quality index for the two groups is very similar.

Table 1.4.

CURRENT SCHOOL STATUS OF AT-LARGE SURVEY POPULATION

<u>Current School Status</u>	<u>Male</u>	<u>Female</u>	<u>Total Sample</u>
High School	24.3%	14.7%	19.4%
Junior College (part time)	0.8	0.6	0.7
Junior College (full time)	0.8	1.6	1.2
College (part time)	2.8	6.1	4.5
College (full time)	16.9	11.0	13.9
Other School	3.1	2.8	3.0
None	50.2	62.6	56.6
No Response	<u>1.0</u>	<u>0.6</u>	<u>0.8</u>
	100% (609)	100% (639)	100% (1248)

Table 1.5.

LAST SCHOOL GRADE COMPLETED - AT-LARGE SURVEY POPULATION

<u>Last-Grade Completed</u>	<u>Male</u>	<u>Female</u>
Grade 8 or lower	1.2%	1.1%
Grade 9 to 11	30.9	21.4
High School Graduate	34.2	35.7
Some College	5.4	12.5
College Graduate	0.8	5.6
Other (incl. no response)	<u>27.6</u>	<u>23.6</u>
	100% (501)	100% (558)

Table 1.6

EDUCATIONAL QUALITY SCORES - AT-LARGE SURVEY POPULATION

Quality Index Points	2-3-4	5-6-7	8-9-10	Total
Males	15.9%	46.0%	38.1%	100% (609)
Females	14.2%	43.3%	42.4%	100% (639)

Chi-Squared = 2.51; D.F. = 2; Significance > 0.2

F. Employment

The current employment status of the men and women surveyed is presented in Table 1.7.

Table 1.7

EMPLOYMENT OF AT-LARGE SURVEY POPULATION

<u>Current Employment Status</u>	<u>Male</u>	<u>Female</u>	<u>Total Sample</u>
Working Full Time	50.9%	43.3%	47.2%
Working Part Time	24.3	16.1	20.1
Not Employed	<u>24.8</u>	<u>40.6</u>	<u>32.7</u>
	100% (609)	100% (639)	100% (1248)

The data reflect the racial imbalance in employment figures which other studies have suggested:

Table 1.8

EMPLOYMENT OF AT-LARGE SURVEY POPULATION (BY RACE)

<u>Current Employment Status</u>	<u>Whites</u>	<u>Blacks</u>	<u>Others</u>
Working Full Time	49.1%	34.5%	45.9%
Working Part Time	20.3	18.6	18.0
Not Employed	<u>30.5</u>	<u>46.9</u>	<u>36.0</u>
	100%	100%	100%

Chi-Squared = 14.63; D.F. = 4; Significance < .01, (n=1248)

SECTION 2: AT-LARGE TARGET POPULATION - MILITARY EXPOSURE AND ATTITUDES

A. Recall of Military Advertising

Almost 80% of the sample recall having seen or heard advertisements for the Armed Forces in the last few months. Recall is significantly greater among men (83.4 percent) than among women (75.4 percent), with only about 1 percent of either group responding, "don't know." Among the women, there is little distinction among the races. However, Hispanic (91 percent) and White men (86 percent) show significantly greater recall of military advertising than do Black (74 percent) or 'other' men (10 percent).

B. Unaided Recall by Specific Branch

The numbers of distinct branches mentioned in response to the general prompt, "For which branches of the military were the advertisements?" are presented in Table 2.1.

Table 2.1

NUMBER OF MILITARY BRANCHES MENTIONED -- UNAIDED

	<u>Males</u>	<u>Females</u>	<u>Total</u>
0	19.9%	29.7%	24.9%
1	22.8	23.9	23.4
2	24.0	28.0	26.0
3	16.7	10.6	13.6
4	9.4	5.3	7.3
5	4.9	1.3	3.0
6	<u>2.3</u>	<u>1.1</u>	<u>1.7</u>
	100%	100%	100%
	(609)	(639)	(1248)

Although many more women than men recall no military branch's advertising, a substantial number do recall ads for one or two. Significantly more men than women recall three or more branches' ads. White males appear to recall advertisements for more branches than do men of other races -- but if the categories are compressed into White, Black, and other, the difference is statistically insignificant.

In the sample as a whole, unaided (spontaneous) recall of Army advertising is most frequent at 52.1 percent. Recall of Navy advertising is 45.7 percent, followed by the Marines (31.7 percent), the Air Force (27.7 percent) and the Coast Guard (7.5 percent). Only 4.2 percent of the sample recalled advertising for the combined services. Again, men show significantly higher recall of advertising for all branches. About twice as many men as women spontaneously recall advertising for the Coast Guard or Marines; about one-third more men recall Air Force advertising. 40.5 percent of women recall Navy advertising, compared to 51.1 percent of men. For the Army, the comparable figures are 49.0 percent and 55.3 percent.

The Chi-squared test shows no significant relationship between unaided advertising recall and the respondents' race -- with one exception. Significantly more Whites (54.4 percent) and Hispanics (63.6 percent) spontaneously recall Navy advertising than do Blacks (31.6 percent) or 'others' (42.3 percent). Believing that the relatively small Hispanic sample might be leading to an erroneous conclusion, a simplified test was performed between just three groups: White, Black, and Other (including Hispanics). Whites' recall is still significantly greater at the 1 percent confidence level.

C. Aided Recall by Specific Branch

Those respondents who did not spontaneously mention a specific branch were prompted by specific mention of the branch. An additional 9.1 percent of the sample thus recall advertising for the Marines; the increment is almost three-quarters male. An additional 5.1 percent is gained in recall of Navy advertising; again, males are far more likely to react positively to the prompt. Recall of Air Force advertising increases 4.8 percent; here, no sex difference is noted. Little or no gain is recorded for the other services.

D. Importance of Career Goals

For each of the various possible career goals listed in Table 2.2, respondents were asked to indicate whether it is "very important" (2 points), "important" (1 point), or "not important" (-1 point).^{*} When the mean scores for the various groups are calculated, it becomes evident that direct inter-group comparisons are not useful: Certain groups tend to score all questions higher than do other groups. For this reason, the figures presented in Table 2.2 (and in Tables 2.3 and 2.4) have been normalized by summing the individual means in each column, then dividing the individual entries by the appropriate column total. This provides clear indications of relative importances in the various groups, and of the relative magnitude of differences. Statistical significance of differences between columns cannot be directly observed, however.

^{*} The numeric scores assigned to these responses are essentially arbitrary, and are chosen to facilitate calculation and interpretation. Other analyses performed at W.A.R.C. are assigned different numeric scores.

Table 2.2
RELATIVE IMPORTANCE OF CAREER GOALS
AT-LARGE SURVEY POPULATION

IMPORTANCES	MALES		FEMALES		WHITES		BLACKS		OTHERS	
	score*	rank	score*	rank	score*	rank	score*	rank	score*	rank
To have a job which will provide security for you and your family	.1536	2	.1504	1	.1526	1	.1441	1	.1532	1
To have an opportunity to develop yourself	.1544	1	.1381	2	.1479	2	.1372	2	.1409	2

To have a job that pays well	.1291	6	.1316	3	.1292	5	.1366	3	.1342	3
To know a valuable trade or skill	.1358	3	.1285	4	.1342	3	.1207	4	.1268	4
To work with other people who you would like to work with	.1330	5	.1184	6	.1291	6	.1048	5	.1169	6
To have a job which is challenging	.1336	4	.1194	5	.1307	4	.1048	6	.1178	5

To have a job in which you can serve your country	.0616	7	.0671	7	.0605	7	.0911	7	.0692	7
To have a position of leadership	.0415	9	.0591	9	.0466	8	.0737	8	.0561	8
To have an opportunity to travel	.0461	8	.0484	9	.0462	9	.0545	9	.0503	9
To have a good time while you are young and not be too concerned with responsibility	.0106	10	.0390	10	.0228	10	.0324	10	.0337	10
	1.0		1.0		1.0		1.0		1.0	

* Normalized. See Section 2.D.

Examination of Table 2.2 shows that the career goals fall into three groups. The relative rank of the first two listed (security and self-development) is essentially the same for all population groups. Similarly, the respondents are in close agreement about the last four listed goals. They evidently care little for travel, nor have they much desire to serve the country. Curiously, although leadership is not sought, the idea of "having a good time" and shunning responsibility is ranked lowest of all.

The only distinctions that can be made between the different groups shown are found in the middle four career goals. The effect appears to be driven through differing attitudes toward salary: Both women and non-White respondents assign a high relative importance to the salary offered by a career choice, sacrificing the opportunity to learn a trade or skill. Men and Whites, on the other hand, rank salary below both desire for a trade and the opportunity for challenging work. It is important to note that differences in the normalized scores within the middle group are much smaller than would be needed to 'graduate' to the first group.

E. Helpfulness of Military Career in Achieving Goals

Table 2.3 presents the normalized scores and rankings of the responses regarding the usefulness of a military career in achieving the previously-offered career goals. Significant differences between perceptions of the benefits offered by such a career and the desires of the population of potential recruits presumably would be of greatest interest.

There is close agreement among the listed groups that a military career most effectively provides an opportunity to learn a valuable trade or skill--but this goal is ranked in the second tier of importances by all groups.

Table 2.3

RELATIVE HELPFULNESS OF MILITARY IN ACHIEVING CAREER GOALS

HELPFULNESS OF MILITARY	MALES		FEMALES		WHITES		BLACKS		OTHERS	
	score*	rank	score*	rank	score*	rank	score*	rank	score*	rank
To have a job which will provide security for you and your family	.1227	3	.1257	1	.1246	2	.1209	3	.1239	2
To have an opportunity to develop yourself	.1243	2	.1152	3	.1202	3	.1136	4	.1239	3
To have a job that pays well	.1084	6	.1033	6	.1027	7	.1216	2	.1098	5
To know a valuable trade or skill	.1251	1	.1244	2	.1249	1	.1242	1	.1292	1
To work with other people who you would like to work with	.0999	8	.0954	8	.0964	8	.0996	6	.1019	6
To have a job which is challenging	.1179	4	.1118	4	.1160	5	.1083	5	.1160	4
To have a job in which you can serve your country	.1164	5	.1103	5	.1186	4	.0983	7	.0958	
To have a position of leadership	.0846	9	.0943	9	.0898	9	.0970	8	.0747	9
To have an opportunity to travel	.1006	7	.0995	7	.1035	6	.0870	9	.0923	8
To have a good time while you are young and not be too concerned with responsibility	0	10	.0201	10	.0032	10	.0292	10	.0325	10
	1.0		1.0		1.0		1.0		1.0	

* Normalized. See Section 2-D.

Table 2.4

RELATIVE HELPFULNESS OF NAVY IN ACHIEVING CAREER GOALS

HELPFULNESS OF NAVY	MALES		FEMALES		WHITES		BLACKS		OTHERS	
	score*	rank	score*	rank	score*	rank	score*	rank	score*	rank
To have a job which will provide security for you and your family	.1190	2	.1166	2	.1167	3	.1192	3	.1223	2
To have an opportunity to develop yourself	.1163	4	.1118	4	.1133	5	.1152	4	.1188	3
To have a job that pays well	.1091	6	.1063	7	.1040	7	.1227	1	.1161	4
To know a valuable trade or skill	.1220	1	.1243	1	.1243	1	.1199	2	.1223	1
To work with other people who you would like to work with	.0961	8	.0930	8	.0933	8	.0980	7	.0993	8
To have a job which is challenging	.1126	5	.1145	3	.1152	4	.1041	6	.1099	5
To have a job in which you can serve your country	.1190	3	.1103	5	.1175	2	.1042	5	.1082	6
To have a position of leadership	.0906	9	.0899	9	.0919	9	.0926	8	.0780	9
To have an opportunity to travel	.1072	7	.1087	6	.1117	6	.0896	9	.1055	7
To have a good time while you are young and not be too concerned with responsibility	.0078	10	.0247	10	.0121	10	.0336	10	.0195	10
	1.0		1.0		1.0		1.0		1.0	

* Normalized. See Section 2-D

However, there does seem to be close agreement, overall, between the two most important goals, and the military's ability to satisfy them. Blacks seem uncertain about the potential for self-development in the military, but they do perceive an opportunity for a good salary--a goal of relatively great concern to that group. Women also are more concerned with salary than are other groups -- and they perceive a poorer opportunity in the military for them to achieve high earnings.

F. Helpfulness of the Navy in Achieving Career Goals

Are there ways in which the various groups distinguish between the helpfulness of the military in general and that of the Navy? A comparison between Table 2.4 and 2.3 does permit some distinctions. Men, for example generally perceive a better opportunity to serve the country in the Navy than in the military in general. But this appears to be achieved through a sacrifice in the more important goal of opportunity for self-development. No other differences appear significant. Women's perception of the Navy and the military in general seem to be essentially the same. Whites see the Navy as offering a better opportunity for serving the country and for having challenging work. But they, too, see sacrifices in what are perceived to be more important areas: The Navy scores poorer than the general military on both job security and self-development. Blacks and other non-White respondents both perceive the Navy as essentially similar to the general military for the more important of their career goals.

G. Probable Future Activities

Respondents were asked to estimate the probabilities that, over the next few years, they would seek further education, seek employment (or change their

present job), or join the Armed Forces. Their responses are presented in Tables 2.5, 2.6, and 2.7. A slightly greater proportion of respondents indicate a desire for further education than an intention to seek work. In neither case is there a statistically significant difference between the responses of the men and women. However, there is a far greater proportion of men than of women who indicate a likelihood of enlistment. To the suggestion of enlistment, more than three-quarters of the female respondents reply, "definitely not."

Table 2.5

STATED PROBABILITY OF PURSUING FURTHER EDUCATION -
AT-LARGE SURVEY POPULATION

	Definitely Decided	Probably Decided	Decided Probably Not	Decided Defini- tely Not	Unsure	Total
Men	332 54.5%	134 22.0%	62 10.2%	60 9.9%	21 3.4%	609 100%
Women	320 50.1%	145 22.7%	79 12.4%	73 11.4%	22 3.4%	639 100%

Chi-Squared = 3.29

Significance = .51

Table 2.6

STATED PROBABILITY OF JOINING THE ARMED FORCES -
AT-LARGE SURVEY POPULATION

	Definitely Decided	Probably Decided	Decided Probably Not	Decided Defini- tely Not	Unsure	Total
Men	34 5.6%	64 10.5%	139 22.8%	326 53.5%	46 7.6%	609 100%
Women	11 1.7%	27 4.2%	95 14.9%	485 75.9%	21 3.3%	639 100%

Chi-Squared = 74.90

Significance = 0.00

Table 2.7

STATED PROBABILITY OF SEEKING OR CHANGING
CIVILIAN EMPLOYMENT - AT-LARGE SURVEY POPULATION

	Definitely Decided	Probably Decided	Decided Probably Not	Decided Defini- tely Not	Unsure	Total
Men	295 48.4%	118 19.4%	79 13.0%	87 14.3%	30 4.9%	609 100%
Women	276 43.2%	147 23.0%	86 13.5%	107 16.7%	23 3.6%	639 100%

Chi-Squared = 6.37

Significance = .17

H. Contact with Military Recruiters

Respondents were asked to indicate whether they had had contact with the Armed Forces recruiting system through a variety of possible means. Some form of contact with military recruiters was reported by 56.5% of men and 35.4% of women interviewed. Of those who reported contact with military recruiters, 31.3% of men and 33.6% of women reported that they (the respondent) had initiated the contact, while 68.7% of men and 66.4% of women reported that the recruiter had initiated the contact.

A summary of responses is presented by contact type by Armed Service in Table 2.8 for men and in Table 2.9 for women. Men report every type of recruiter contact with greater frequency than do women. More men report having received a call from a recruiter than contact through any other means; conversations in meetings, visits to recruiting stations and recruiter speeches follow in frequency. For women, meetings and speeches are reported most frequently, visits to recruiting stations and telephone calls from recruiters are next in rank.

The simple sum of all types of contact activity for each service allows a rough inter-service comparison of recruiter contact levels. The final row in Tables 2.8 and 2.9 provide this. Finally, the last column in the two tables account for contact with any of the services for each contact type. A comparison of these entries with the simple sum of the row (contact type) can be used to approximate reported multiple service contacts by respondents. On the whole such multiple service contacts of the same type are infrequent and in no case exceed 30% of respondents for men.

As an example of the last point, 9.2% of men surveyed report that they had telephoned a recruiting office. Since our sample size is 609 respondents, this computes to 56 men. When the percent of the sample who report that they

had telephoned each service are added together, 9.8% is achieved [3.4% for Army + 3.07% Navy + 1.8% Air Force + 1.6% Marines]. This 9.8% computes to roughly 60 men. Hence a maximum of 4 (60 - 56) out of 56 respondents reported telephoning more than one service's recruiting office.

Table 2.8

REPORTED HISTORY OF RECRUITER CONTACT (Non-Exclusive)
AT-LARGE TARGET POPULATION MEN
Sample Size = 609

	Army	Navy	Air Force	Marines	Any Service
Telephoned a recruiting office	3.4%	3.0	1.8	1.6	9.2
Called a toll free number	1.0	1.1	.8	.3	3.1
Wrote to a recruiting office	2.1	1.5	2.0	1.0	5.4
Visited a recruiting office	6.9	5.9	4.3	3.3	17.4
Returned a postcard	4.6	3.6	3.3	3.4	11.5
Talked with a recruiter in a meeting	11.7	8.9	7.2	4.8	28.9
Mailed back a card or coupon	3.0	2.8	2.5	1.6	7.2
Received a call from a recruiter	13.6	10.3	5.9	7.2	32.5
Heard a speech by a recruiter	11.8	5.7	7.7	6.4	25.3
Received a visit from a recruiter	3.0	1.5	.5	1.6	6.1
Column Total	61.1	44.3	36.0	35.7	146.6

Table 2.9

**REPORTED HISTORY OF RECRUITER CONTACT (Non-Exclusive)
AT-LARGE TARGET POPULATION WOMEN
Sample Size = 639**

	Army	Navy	Air Force	Marines	Any Service
Telephoned a recruiting office	2.6%	2.3	2.2	.9	6.4
Called a toll free number	.2	.8	.2	.3	.9
Wrote to a recruiting office	.9	1.1	.8	.3	2.7
Visited a recruiting office	3.0	3.4	4.1	1.4	10.2
Returned a postcard	1.6	1.1	2.3	.8	4.5
Talked with a recruiter in a meeting	6.6	4.5	4.9	2.7	16.4
Mailed back a card or coupon	.8	.9	1.3	.6	2.8
Received a call from a recruiter	5.8	3.3	2.8	1.3	11.6
Heard a speech by a recruiter	8.9	4.4	5.9	3.4	19.1
Received a visit from a recruiter	1.1	1.1	.5	.3	2.7
Column Total	34.9	22.9	25.0	12.0	77.3

SECTION 3: DEMOGRAPHIC DIFFERENCES WITHIN RECRUITING PROCESS

The data used in this section were obtained through self-administered, written questionnaires. These were completed by potential Navy recruits who visited Navy recruiting offices, who took Navy qualifying tests,* or who signed Navy enlistment contracts between June 5 and July 28, 1979. Individuals who had signed enlistment contracts in previous periods, and whose tours began during the measurement period also completed the questionnaires. In all, 1,030 respondents were obtained in the first category, 844 at the testing stage, and 780 at actual enlistment.

In reviewing the differences observed between groups at various stages in the recruiting process, it is important to avoid incorrect assumptions regarding the meanings of these differences. Two classes of interpretation are possible and attractive: one, that candidates with certain demographic characteristics, attitudes and perceptions are more likely to enlist;** or two, that the Navy recruiting progress tends to select candidates of a certain type, and screens out others. Either, both, or neither of these may in fact be true; causality can not be determined from the information presented in this section.

The reader should also consider that statistical significance can be obtained even with small sample sizes. In such cases the reported findings may be useful as bases for policy decision only if they can be confirmed by additional research.

* The "test" to which this report often refers is the series of examinations conducted at Armed Forces Entry and Examination Stations (AFEES).

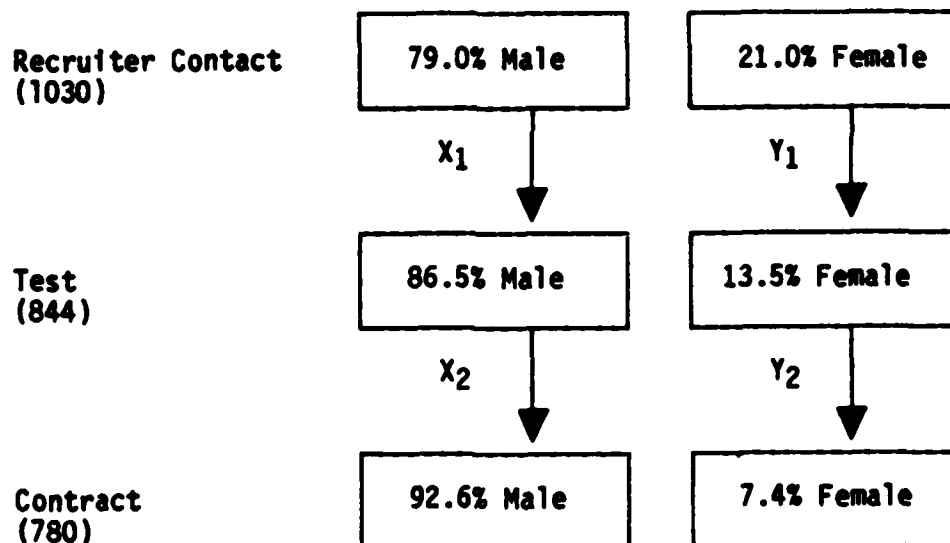
** Section 5-B uses another method data to examine this hypothesis.

A. Sex

There is a significantly greater proportion of males entering the recruiting process. Table 3.1 shows that the imbalance grows throughout -- that the proportion of women drops sharply from stage to stage. The calculated progression rate for women is only half that of men; details are presented in Appendix 3.1. It is not clear whether the change in proportion is due to the attitudes and desires of women in the recruiting process, or if it results from differential selection criteria or quotas imposed by the recruiting process itself.

Table 3.1

PROGRESSION RATES THROUGH RECRUITING PROCESS



PROGRESSION RATES

	Male	Female
From Recruiter to Test	X_1	$Y_1 = 0.6X_1$
From Test to Contract	X_2	$Y_2 = 0.5X_2$

B. Age

The age distributions of the three samples are presented in Table 3.2. There are significant differences of proportion in the compositions of the several populations of potential recruits. The trend for both sexes from stage to stage is toward a concentration of 17- to 20-year olds, with decreasing percentages of both younger and older groups.

Table 3.2
AGE DISTRIBUTION IN RECRUITING PROCESS*

MEN

	16	17-18	19-20	21-22	23+	Total
Recruiter Contact	39 4.8%	432 53.1%	185 22.8%	79 9.7%	78 9.6%	813 100%
Test Takers	16 2.2%	402 55.1%	182 25.0%	63 8.6%	66 9.1%	729 100%
Contract Signers	0 0	515 71.6%	139 19.3%	37 5.1%	28 3.9%	719 100%

WOMEN

	16	17-18	19-20	21-22	23+	Total
Recruiter Contact	17 7.9%	89 41.2%	55 25.5%	23 10.6%	32 14.8%	216 100%
Test Takers	5 4.4%	67 58.8%	22 19.3%	7 6.1%	13 11.4%	114 100%
Contract Signers	0 0	29 50.0%	18 31.0%	4 6.9%	7 12.1%	58 100%

*See Table 1.1 for age distribution of at-large target population

C. Race

The racial distribution of potential recruits at various stages in the recruiting cycle varies only slightly. A smaller proportion of Black men actually enlist than participate in the first two stages of the process-- but this is significant only at the .06 level. By contrast, there is a significant (at the .03 level) increase in the proportion of actual male enlistees who report their race as Asian; the sample size is small, however.

Table 3.3

RACIAL DISTRIBUTION IN RECRUITING PROCESS

MEN

	Amerl. Indian	Asian	Black	Hispanic	White	Other	No Answer	Total
Telephone Survey	33 5.4%	4 0.7%	57 9.4%	11 1.8%	472 77.5%	15 2.5%	17 2.8%	609 100%
Recruiter Contact	26 3.3%	2 0.3%	77 9.7%	13 1.6%	603 76.3%	18 2.3%	51 6.5%	790 100%
Test Takers	21 2.9%	2 0.3%	65 9.1%	16 2.2%	570 79.5%	15 2.1%	28 3.9%	717 100%
Contract Signers	22 3.1%	8 1.1%	49 6.9%	13 1.8%	553 77.8%	31 4.4%	35 4.9%	711 100%

Table 3.3 Cont'd

RACIAL DISTRIBUTION IN RECRUITING PROCESS

WOMEN

	Ameri. Indian	Asian	Black	Hispanic	White	Other	No Answer	Total
Telephone Survey	24 3.8%	3 0.5%	67 10.5%	16 2.5%	517 80.9%	5 0.8%	7 1.1%	639 100%
Recruiter Contact	9 4.2%	0 0	26 12.2%	0 0	163 76.5%	5 2.3%	10 4.7%	213 100%
Test Takers	3 2.7%	0 0	11 10.0%	3 2.7%	87 79.1%	2 1.8%	4 3.6%	110 100%
Contract Signers	3 5.2%	0 0	9 15.5%	0 0	42 72.4%	3 5.2%	1 1.7%	58 100%

The racial composition of the female portion of the samples also shows only slight variations through the recruiting process. None of these differences are statistically significant.

D. Marital Status

Although married men both visit recruiters and take the qualifying tests, there is a more than 50 percent difference in the proportions of married male candidates between the test and contract stages. The proportion of married women reduces sooner--between initial recruiter contact, and the test stage.*

* The behavioral differences in respect to marital status are dependent also on age. Table 3.5 shows that while the proportion of married younger women declines through the recruiting progress, the proportion of married older women increases. (The small sample sizes suggest the need for further research to verify these findings, however.)

Table 3.4
MARITAL STATUS OF GROUPS IN RECRUITING PROCESS

MEN

	Married	Single	Total
Telephone Survey	46 7.6%	557 91.5%	603 99.1%*
Recruiter Contact	63 7.8%	743 92.2%	806 100%
Test Takers	60 8.4%	653 91.6%	713 100%
Contract Signers	26 3.6%	693 96.4%	719 100%

WOMEN

	Married	Single	Total
Telephone Survey	238 37.2%	373 58.4%	611 95.6%*
Recruiter Contact	19 8.9%	194 91.1%	213 100%
Test Takers	9 8.3%	100 91.7%	109 100%
Contract Signers	8 13.8%	58 86.2%	58 100%

* For complete distribution, see Table 1.3.

Table 3.5

MARITAL STATUS OF FEMALE RESPONDENTS BY AGE

	AGE	MARRIED	SINGLE	ROW TOTAL
RECRUITER	16-19	6 4.6%	130 95.4%	136
	20+	13 16.9%	64 83.1%	77
	Total	19 8.9%	194 91.1%	213

TEST	16-19	2 2.5%	78 97.5%	80
	20+	7 24.1%	22 75.9%	29
	Total	9 8.3%	100 91.7%	109

CONTRACT	16-19	1 2.3%	42 97.7%	43
	20+	7 46.7%	8 53.3%	15
	Total	8 13.8%	50 86.2%	58

E. Education

Table 3.6 shows the current school status of the participants in the recruiting process. It is not surprising that few respondents sign Navy contracts while they are still in school.

Table 3.6

CURRENT EDUCATIONAL ENROLLMENT STATUS OF GROUPS IN RECRUITING PROCESS

MEN

	High School	Tech. or Voca.	Junior College	College	Not in School*	Total
Telephone Survey	148 24.3%	19 3.1%	10 1.6%	120 19.7%	306 50.2%	603 98.9%**
Recruiter Contact	159 19.6%	18 2.2%	10 1.2%	19 2.3%	607 74.7%	813 100%
Test Takers	100 13.7%	8 1.1%	6 0.8%	13 1.8%	603 82.6%	730 100%
Contract Signers	19 2.6%	1 0.1%	2 0.3%	5 0.7%	695 96.3%	722 100%

WOMEN

	High School	Tech. or Voca.	Junior College	College	Not in School*	Total
Telephone Survey	94 14.7%	18 2.8%	14 2.2%	109 17.1%	400 62.6%	635 99.4%**
Recruiter Contact	42 19.4%	5 2.3%	6 2.8%	12 5.6%	151 69.9%	216 100%
Test Takers	28 24.6%	2 1.8%	1 0.9%	3 2.6%	80 70.2%	114 100%
Contract Signers	0 0	0 0	1 1.7%	0 0	57 98.3%	58 100%

* Table 3.7 presents details of previous education of respondents no longer enrolled in school.

** For complete distribution, see Table 1.4.

Of the men who have left school, 89 percent of the contract signers are high school graduates (completed grade 12; see Table 3.7). Though there are some who have not completed high school who contact recruiters and take the qualifying test, their proportion in the group of contract signers is reduced.

The proportions of college, junior college and technical or vocational school graduates are reduced through the recruiting process.

The women present a very similar pattern. The proportion of high school non-graduates declines through the process. These people do contact recruiters. But at the test stage, and again at contract, their proportion is reduced.

Eighty percent of the women that sign contracts are high school graduates, suggesting that they have a better chance of passing the tests (and/or that the opportunity of obtaining a job elsewhere is not good.)

A higher percentage of female college graduates contact recruiters than that of males at the same educational level. But the proportion at enlistment is about the same for both men and women.

Table 3.7

SIMPLIFIED DISTRIBUTION OF HIGHEST GRADE ATTAINED
FOR THOSE NOT IN SCHOOL*

MEN

	Below High School Graduate	High School Graduate	Junior College	Technical or Vocational	College	Total
Recruiter Contact	195 32.6%	335 56.1%	19 3.2%	22 3.7%	26 4.4%	597
Test Takers	130 21.9%	406 68.4%	18 3%	18 3%	22 3.7%	594
Contract Signers	78 11.4%	572 83.9%	7 1%	12 1.8%	13 1.9%	682

WOMEN

	Below High School Graduate	High School Graduate	Junior College	Technical or Vocational	College	Total
Recruiter Contact	34 23.1%	79 53.7%	15 10.2%	6 4.1%	13 8.8%	147
Test Takers	13 16.3%	51 63.8%	6 7.5%	3 3.8%	7 8.8%	80
Contract Signers	4 7.0%	46 80.7%	3 5.3%	3 5.3%	1 1.8%	57

* See Table 1.5 for distribution of at-large target population.

F. Employment

The school/employment status of men and women at various stages in the recruiting process is presented in Table 3.8. For both men and women, the proportion of candidates who are neither in school nor employed is seen to be larger at successive stages in the recruiting process.

To reduce any seasonal effect which might be induced by the number of recent high school graduates included in the samples, separate analyses of sub-groups of different ages are offered in Tables 3.9, 3.10, and 3.11.

For all sub-groups, there is a progressive concentration, through the recruiting process, of candidates who report that they are both unemployed and out-of-school. In general, the overall (average) proportion of those who report themselves out-of-work and out-of-school is largest among recent, male graduates--identified as high school graduates aged 17 and 18 (Table 3.9). This finding is the same for women. Among the remainder of the population (Table 3.10) most of the participants in the recruiting process also report themselves out-of-school and out-of-work, but the absolute percentages are smaller. If only older participants are examined (Table 3.11), the percentage that report that they are neither working nor in school is again greater than in the general population.

Table 3.8

**REPORTED EMPLOYMENT STATUS OF GROUPS
IN RECRUITING PROCESS**

MEN

	In School		Not In School		Total Sample Size
	Not Working	Working	Not Working	Working	
Telephone Suvey	83 13.4%	224 36.1%	70 11.3%	242 39.1%	619 100%
Recruiter	83 10.3%	120 14.9%	315 39.1%	288 35.7%	806 100%
Test	58 8.1%	66 9.2%	382 53.4%	210 29.3%	716 100%
Contract	18 2.5%	9 1.3%	566 79.1%	123 17.2%	716 100%

WOMEN

	In School		Not In School		Total Sample Size
	Not Working	Working	Not Working	Working	
Telephone Suvey	90 15.3%	147 25.0%	155 26.4%	196 33.3%	588 100%
Recruiter	27 12.7%	36 16.9%	72 33.8%	78 36.6%	213 100%
Test	15 13.4%	17 15.2%	58 51.8%	22 19.6%	112 100%
Contract	0 0	1 1.7%	44 75.9%	13 22.4%	58 100%

Table 3.9A

REPORTED EMPLOYMENT STATUS
17-18 AGED MALE RESPONDENTS, HIGH SCHOOL GRADUATES

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	15 11.5	21 16.0	25 19.1	15 11.5	13 9.9	42 32.1	131 100%
Recruiter	7 2.3	6 2.0	2 0.7	157 51.6	51 16.8	81 26.6	304 100%
Test	4 1.3	0 0.0	1 0.3	214 69.7	27 8.8	61 19.9	307 100%
Contract	1 0.2	0 0.0	0 0.0	426 86.9	20 4.1	43 8.8	490 100%
Recruiter + Test + Contract	12 1.1	6 0.5	3 0.3	797 72.4	98 8.9	185 16.8	1101 100%

Table 3.9B

**REPORTED EMPLOYMENT STATUS
17-18 AGED FEMALE RESPONDENTS, HIGH SCHOOL GRADUATES**

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	19 18.3	19 18.3	22 21.2	18 17.3	4 3.8	22 21.2	104 100%
Recruiter	1 1.6	4 6.6	4 6.6	24 39.3	15 24.6	13 21.3	61 100%
Test	2 4.4	0 0.0	1 2.2	35 77.8	5 11.1	2 4.4	45 100%
Contract	0 0.0	1 3.6	0 0.0	20 71.4	3 10.7	4 14.3	28 100%
Recruiter + Test + Contract	3 2.2	5 3.7	5 3.7	79 59.0	23 17.2	19 14.2	134 100%

Table 3.10A

EMPLOYMENT STATUS
17-18 AGED MALE RESPONDENTS, NON-HIGH SCHOOL GRADUATES
AND 19 OR ABOVE AGED RESPONDENTS

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	68 13.9	99 20.3	79 16.2	55 11.3	17 3.5	170 34.8	488 100%
Recruiter	69 11.6	77 12.9	25 4.2	232 38.9	28 4.7	166 27.8	597 100%
Test	53 11.1	45 9.4	17 3.6	226 47.3	27 5.6	110 23.0	478 100%
Contract	17 5.8	4 1.4	5 1.7	198 67.3	13 4.4	57 19.4	294 100%
Recruiter + Test + Contract	139 10.2	126 9.2	47 3.4	656 47.9	68 5.0	333 24.3	1369 100%

Table 3.10B

EMPLOYMENT STATUS
17-18 AGED FEMALE RESPONDENTS, NON-HIGH SCHOOL GRADUATES
AND 19 OR ABOVE AGED RESPONDENTS

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	71 14.7	53 11.0	53 11.0	137 28.3	26 5.4	144 29.8	484 100%
Recruiter	19 11.8	17 10.6	14 8.7	54 33.5	9 5.6	48 29.8	161 100%
Test	11 15.1	11 15.1	5 6.8	29 39.7	3 4.1	14 19.2	73 100%
Contract	0 0.0	1 3.1	0 0.0	24 75.0	2 6.3	5 15.6	32 100%
Recruiter + Test + Contract	30 11.3	29 10.9	19 7.1	107 40.2	14 5.3	67 25.2	266 100%

Table 3.11A
EMPLOYMENT STATUS
19 OR ABOVE AGED MALE RESPONDENTS

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	27 9.0	32 10.7	44 14.7	34 11.4	14 4.7	148 49.5	299 100%
Recruiter	14 11.8	7 10.6	13 8.7	155 33.5	12 5.6	136 29.8	337 100%
Test	13 4.2	8 2.6	5 1.6	165 53.9	20 6.5	95 31.0	306 100%
Contract	5 2.5	0 0.0	3 1.5	138 69.0	9 4.5	45 22.5	200 100%
Recruiter + Test + Contract	32 3.8	15 1.8	21 2.5	458 54.3	41 4.9	276 32.7	843 100%

Table 3.11B

EMPLOYMENT STATUS
19 OR ABOVE AGED FEMALE RESPONDENTS

Count Row%	In School			Not In School			Row Total
	Not Working	Working Part-Time	Working Full-Time	Not Working	Working Part-Time	Working Full-Time	
General (Telephone)	28 7.8	20 5.5	38 10.5	114 31.6	25 6.9	136 37.7	361 100%
Recruiter	4 3.7	6 5.5	6 5.5	44 40.4	6 5.5	43 39.4	109 100%
Test	3 7.1	0 0.0	1 2.4	23 54.8	1 2.4	14 33.3	42 100%
Contract	0 0.0	0 0.0	0 0.0	24 82.8	1 3.4	4 13.8	29 100%
Recruiter + Test + Contract	7 3.7	6 3.3	7 3.9	91 50.6	8 4.4	61 33.9	180 100%

SECTION 4: PERCEPTIONS OF THE MILITARY - PARTICIPANTS IN THE RECRUITING PROCESS

A. Differences in Life Goals Across the Recruiting Process

Section 2-D presented an examination of the importance placed on various life goals by respondents to a telephone survey. We now turn to an analysis of the importance placed on those life goals by participants in the recruiting process. These data were recorded on self-administered, written questionnaires. Tables A-4.1 through A-4.10 (in Appendix 4.1) show the importance placed on individual life goals by respondents at each stage.

Of interest here are the differences in assigned importances at different points in the recruiting process, with particular emphasis on those goals of greatest overall significance. Table 4.1 presents this summary information. To facilitate comparisons between the groups, and with the tables presented in Sections 2.D, 2.E, and 2.F, the goals are presented in the general order of overall importance for the general population of eligible young people (telephone survey). Note that men sampled at succeeding stages of the recruiting process assign greater importance to several goals. Some of these differences are uniform from stage to stage; for others, the difference is significant only between the test-taking and contract stages. There is no observed difference in the importance assigned to having a good time; nor in the importance of good pay.

These last two goals actually present negative differences in importance among women sampled at succeeding stages of the recruiting process. The pattern of findings for women is similar to that for men, but in general is less pronounced.

To determine whether there is a statistically significant overall dif-

ference between the reported life goals of men and women at the various stages, a multivariate T-squared test is employed. This test (see Appendix 4.2) examines the changes from one group to another among all ten measured responses, and permits conclusions regarding overall similarity or difference. Comparing among all ten life goals simultaneously, the T-squared test leads to the conclusion that all three groups of men are different from each other at a 5 percent level of significance -- there are real differences from stage to stage in the recruiting process (see Table 4.2).

Application of the T-squared test to the life goals of women in the recruiting process (Table 4.3) leads to less conclusive results. Although there is a significant difference at the 5 percent confidence level (and even at the 1 percent confidence level) between women at the recruiter stage and contract stage, the differences between recruiter and test stages, and between test and contract stages are found not to be significant even at the 10 percent level.

The conclusions which can be drawn from these findings are not without ambiguity. We do note that the life goals of men at succeeding stages of the recruiting process are significantly different, and that there is a pattern to the differences. This suggests that there may be one or more distinct segments of the population which are more disposed to enlist for Navy service.* It is not evident, however, whether these segments exist independently of the recruiting process, or if they are somehow shaped or molded by it, instead. In either case, it may be that the seeming concentration of certain segments is fostered by a kind of active selection mechanism inherent in the recruiting process. This might operate by either attraction or by exclusion. An alterna-

* See Section 5.C, Segmentation Analysis

tive hypothesis would be that the life goals of some individuals are themselves modified by the recruiting experience. Further study of correlations between differences in life goals and in perceptions of the military and the Navy may aid in understanding these phenomena. Further study may also explicate the less significant findings with respect to prospective female recruits.

Table 4.1

DIFFERENCES IN LIFE GOAL IMPORTANCE ACROSS RECRUITING PROCESS
(Independent Samples. Differences Measured on Univariate Scales)

Life Goals Listed in Average Order of Importance to Telephone Survey Population	MEN		WOMEN	
	between recruiter and test	between test and contract	between recruiter and test	between test and contract
Job Security	---	↑	---	---
Self-Development	---	↑	---	↑
Good Pay	---	---	---	↓
Learn a Trade or Skill	---	↑	---	↑
Nice People to Work With	---	↑	---	---
Challenging Work	↑	↑	---	↑
Service to Country	↑	↑	↑	↑
Leadership	↑	↑	---	↑
Travel Opportunity	↑	↑	↑	---
Have a Good Time	---	---	---	↓

↑ = significant increase in stated importance (.05 level)

↓ = significant decrease in stated importance (.05 level)

--- = no change

Table 4.2

COMPARISON OF MEN'S LIFE GOALS
AT STAGES IN RECRUITING PROCESS

Multivariate T² Test: Recruiter Stage vs. Test Stage

N1	790								
N2	706								
COVARIANCE MATRIX									
3.88	2.40	3.30	2.35	4.36	3.03	3.00	2.49	2.46	3.38
2.40	1.82	2.25	1.65	2.95	2.09	2.04	1.70	1.72	2.29
3.30	2.25	3.52	2.21	4.16	2.88	2.81	2.35	2.33	3.20
2.35	1.65	2.21	1.76	2.89	2.06	1.99	1.69	1.68	2.24
4.36	2.95	4.16	2.89	6.02	3.80	3.67	3.14	3.00	4.17
3.03	2.09	2.88	2.06	3.80	2.93	2.63	2.17	2.17	2.92
3.00	2.04	2.81	1.99	3.67	2.63	2.79	2.11	2.14	2.88
2.49	1.70	2.35	1.69	3.14	2.17	2.11	1.99	1.75	2.37
2.46	1.72	2.33	1.68	3.00	2.17	2.14	1.75	1.92	2.37
3.38	2.29	3.20	2.24	4.17	2.92	2.88	2.37	2.37	3.55
T SQUARE									
20.17941909									
TEST STATISTICS									
2.005785632									

Significant at $\alpha = .05$
F_{10, =} , ($\alpha=.05$) = 1.83

Multivariate T² Test: Test Stage vs. Contract Stage

N1	706								
N2	713								
COVARIANCE MATRIX									
3.55	2.19	2.97	2.17	4.17	2.83	2.76	2.37	2.28	3.08
2.19	1.64	2.02	1.51	2.82	1.94	1.88	1.62	1.59	2.08
2.97	2.02	3.12	2.00	3.92	2.66	2.56	2.20	2.12	2.86
2.17	1.51	2.00	1.63	2.79	1.93	1.86	1.62	1.57	2.06
4.17	2.82	3.92	2.79	5.99	3.74	3.55	3.11	2.90	3.98
2.83	1.94	2.66	1.93	3.74	2.80	2.47	2.12	2.05	2.71
2.76	1.88	2.56	1.86	3.55	2.47	2.59	2.02	1.99	2.64
2.37	1.62	2.20	1.62	3.11	2.12	2.02	1.96	1.68	2.25
2.28	1.59	2.12	1.57	2.90	2.05	1.99	1.68	1.78	2.17
3.08	2.08	2.86	2.06	3.98	2.71	2.64	2.25	2.17	3.21
T SQUARE									
28.9863099									
TEST STATISTICS									
2.880246438									

Significant at $\alpha = .01$
F_{10, =} , ($\alpha=.01$) = 2.32

Table 4.2 Cont'd

COMPARISON OF MEN'S LIFE GOALS
AT STAGES IN RECRUITING PROCESS

Multivariate T² Test: Recruiter Stage vs. Contract Stage

N1	790									
N2	715									
COVARIANCE MATRIX										
3.78	2.27	3.17	2.23	4.30	2.93	2.90	2.45	2.33	3.26	
2.27	1.66	2.10	1.52	2.84	1.97	1.92	1.63	1.58	2.15	
3.17	2.10	3.33	2.07	4.05	2.76	2.69	2.29	2.15	3.02	
2.23	1.52	2.07	1.63	2.81	1.95	1.89	1.64	1.54	2.11	
4.30	2.84	4.05	2.81	6.01	3.78	3.61	3.15	2.88	4.05	
2.93	1.97	2.76	1.95	3.78	2.85	2.54	2.14	2.02	2.80	
2.90	1.92	2.69	1.89	3.61	2.54	2.69	2.08	2.00	2.77	
2.45	1.63	2.29	1.64	3.15	2.14	2.08	1.99	1.68	2.31	
2.33	1.58	2.15	1.54	2.88	2.02	2.00	1.68	1.74	2.20	
3.26	2.15	3.02	2.11	4.05	2.80	2.77	2.31	2.20	3.37	
T SQUARE										
36.014196										
TEST STATISTICS										
3.778656608										

Significant at $\alpha = .01$
F10, = , ($\alpha = .01$) = 2.32

Table 4.3

COMPARISON OF WOMEN'S LIFE GOALS
AT STAGES IN RECRUITING PROCESS

Multivariate T² Test: Recruiter Stage vs. Test Stage

N1 212
N2 111

COVARIANCE MATRIX

4.35	2.60	3.48	2.40	4.72	3.13	3.03	2.83	2.49	3.89
2.60	1.89	2.26	1.60	3.01	2.06	2.03	1.84	1.67	2.55
3.48	2.26	3.41	2.12	4.17	2.75	2.66	2.51	2.19	3.43
2.40	1.60	2.12	1.67	2.87	1.92	1.87	1.75	1.55	2.37
4.72	3.01	4.17	2.87	6.14	3.74	3.51	3.45	2.88	4.56
3.13	2.06	2.75	1.92	3.74	2.80	2.44	2.24	1.99	3.10
3.03	2.03	2.66	1.87	3.51	2.44	2.58	2.14	1.96	3.02
2.83	1.84	2.51	1.75	3.45	2.24	2.14	2.27	1.77	2.71
2.49	1.67	2.19	1.55	2.88	1.99	1.96	1.77	1.72	2.45
3.89	2.55	3.43	2.37	4.56	3.10	3.02	2.71	2.45	4.14

T SQUARE

13.748961

TEST STATISTICS

1.336347611

Not Significant at $\alpha = 0.1$

F_{10, =, ($\alpha = 0.1$) = 1.34}

Multivariate T² Test: Test Stage vs. Contract Stage

N1 111
N2 56

COVARIANCE MATRIX

3.95	2.32	3.12	2.36	4.67	2.89	2.79	2.76	2.28	3.36
2.32	1.60	1.98	1.50	2.95	1.85	1.77	1.76	1.49	2.14
3.12	1.98	2.94	2.00	4.07	2.59	2.39	2.39	1.97	2.86
2.36	1.50	2.00	1.75	3.03	1.92	1.85	1.82	1.53	2.21
4.67	2.95	4.07	3.03	6.59	3.85	3.49	3.58	2.91	4.27
2.89	1.85	2.59	1.92	3.85	2.72	2.29	2.22	1.88	2.75
2.79	1.77	2.39	1.85	3.49	2.29	2.33	2.10	1.79	2.61
2.76	1.76	2.39	1.82	3.58	2.22	2.10	2.35	1.74	2.52
2.28	1.49	1.97	1.53	2.91	1.88	1.79	1.74	1.57	2.12
3.36	2.14	2.86	2.21	4.27	2.75	2.61	2.52	2.12	3.39

T SQUARE

10.43182623

TEST STATISTICS

0.9862817527

Not Significant at $\alpha = 0.1$

F_{10, =, ($\alpha = 0.1$) = 1.60}

Table 4.3 Cont'd

COMPARISON OF WOMEN'S LIFE GOALS
AT STAGES IN RECRUITING PROCESS

Multivariate T² Test: Recruiter Stage vs. Contract Stage

N1	212									
N2	56									
COVARIANCE MATRIX										
4.26	2.52	3.50	2.36	4.66	3.14	2.97	2.83	2.43	3.88	
2.52	1.82	2.27	1.58	2.97	2.05	1.98	1.83	1.62	2.52	
3.50	2.27	3.53	2.17	4.26	2.82	2.70	2.56	2.19	3.49	
2.36	1.58	2.17	1.65	2.88	1.93	1.85	1.77	1.50	2.38	
4.66	2.97	4.26	2.88	6.21	3.83	3.51	3.50	2.89	4.62	
3.14	2.05	2.82	1.93	3.83	2.88	2.44	2.27	2.00	3.14	
2.97	1.98	2.70	1.85	3.51	2.44	2.53	2.14	1.91	2.99	
2.83	1.83	2.56	1.77	3.50	2.27	2.14	2.35	1.75	2.76	
2.43	1.62	2.19	1.50	2.89	2.00	1.91	1.75	1.68	2.43	
3.88	2.52	3.49	2.38	4.62	3.14	2.99	2.76	2.43	4.14	

T SQUARE

25.01350859

TEST STATISTICS

2.416718687

Significant at $\alpha = .01$

F_{10, =}, ($\alpha = .01$) = 2.32

B. Differences in Perception of the Navy Through the Recruiting Process

By examining men's and women's perception of the Navy at different points in the recruiting cycle, it may be possible to measure the effect on perceptions of the intervening step or steps.

For example, part of the men who completed questionnaires at the "recruiter" stage did so before they had any substantive conversation with a recruiter. The remainder completed questionnaires after their recruiter visit. If there are statistically significant differences between the two groups' perceptions, then it may be inferred that the difference results from the interaction with Navy recruiters. Similarly, significant differences in perceptions measured before or after taking the Navy qualifying tests may suggest ways in which the test itself affects potential recruits.

Table 4.4 summarizes the differences in men's and women's perceptions of the Navy across both processes.* We see that recruiters have no statistically significant ($\alpha=.05$) effect on women, although the direction of change always matches significant changes among men. These include positive changes in men's average perception of the Navy's helpfulness in achieving (a) job security, (b) a trade of skill, (c) leadership. There is a reduced perception of the Navy as a career offering a good time.

The test negatively affects men's perceptions of the opportunities for self-development in the Navy. Women's perceptions of Navy pay and job security improve significantly. Other changes are not statistically significant.

* Appendix 4.3 presents complete tables.

Table 4.4

DIFFERENCES IN PERCEPTIONS OF
NAVY'S HELPFULNESS IN ACHIEVING LIFE GOALS
(Independent samples; differences measured on univariate scale)

Life Goals Listed in Average Order of Importance to Telephone Survey Population	MEN		WOMEN	
	pre- to-post recruiter	pre- to-post test	pre- to-post recruiter	pre to-post test
Job Security	↑	-	+	↑
Self-Development	+	↓	+	+
Good Pay	+	+	+	↑
Learn a Trade or Skill	↑	+	+	+
Nice People to Work With	+	-	+	+
Challenging Work	+	-	-	+
Service to Country	-	-	-	-
Leadership	↑	-	+	+
Travel Opportunity	+	-	+	-
Have a Good Time	↓	+	-	+

↑ = significantly better in perception of Navy ability to help (.05 level)

↓ = significantly poorer in perception of Navy ability to help (.05 level)

+

- = insignificant negative difference

The T^2 test is used to evaluate the significance of overall differences between one group and another (see Appendix 4.2). Table 4.5 summarizes these results. Appendix 4.3 presents detailed figures and calculations.

Table 4.5
SUMMARY OF T^2 TESTS OF CHANGES IN
MULTIVARIATE MEASURES OF PERCEPTIONS OF NAVY

	MEN	WOMEN
Pre/Post Recruiter	0	0
Post Recruiter/Pre Test	0	0
Pre/Post Test	**	*
Pre and Post Dep/Direct Entry	0	0
Pre/Post Dep	0	0

* significant difference at $\alpha = 0.1$
 ** significant difference at $\alpha = .05$
 0 no significant difference

C. Differences in Stated Probability to Go to Next Step*

1. Before/After Recruiter Contact

There are significant differences in the stated intention to go on to the next step* among samples at different stages of the recruiting process. Table 4.6 compares the stated intentions of those completing questionnaires before and after speaking with recruiters.** The t-test suggests a significantly

* This measurement is used as a proxy for likelihood to join. It is felt that a more accurate estimate can be provided of a relatively immediately event (next step) than of a more remote one (actual enlistment).

** Two independent samples.

improved likelihood to take AFES tests (at $\alpha=.01$) following a recruiter visit. Further, we note that the improvement is uniformly distributed across the population; it is not restricted merely to those "undecideds" who might have shifted from the middle range of answers.

If a similar analysis is performed on segregated male and female respondents, it is found that the effect (increased stated likelihood of continuation) is greater for men than for women. The men's difference is significant even at $\alpha=.001$, while for women the change is only significant at the .05 level. See Tables 4.7 and 4.8.

Table 4.7

LIKELIHOOD OF TAKING AFEEES TESTS
BEFORE AND AFTER RECRUITER CONTACT
BY SEX

Pre-Recruiter/Post Recruiter Analysis

<u>MEN</u>	Definitely <-----> Definitely Will Join Will <u>Not</u> Join					Total
	1	2	3	4	5	
Pre- Recruiter	155 40.9%	86 22.7%	74 19.5%	35 9.2%	29 7.7%	379 100%
Post- Recruiter	226 58.5%	63 16.3%	54 14%	22 5.7%	21 5.4%	386 100%
Total	381	149	128	57	50	765

<u>WOMEN</u>	Definitely <-----> Definitely Will Join Will <u>Not</u> Join					Total
	1	2	3	4	5	
Pre- Recruiter	56 42.7%	21 16%	20 15.3%	8 6.1%	26 19.8%	131 100%
Post- Recruiter	42 52.5%	12 15%	15 18.8%	5 6.3%	6 7.5%	80 100%
Total	98	33	35	13	32	211

Table 4.8
SIGNIFICANCE TESTS
OF DATA IN TABLE 4.7

	MALE		FEMALE	
	Pre-Recruiter	Post-Recruiter	Pre-Recruiter	Post-Recruiter
Mean	2.201	1.829	2.44	2.016
Variance	1.624	1.428	2.45	1.644

$$\begin{aligned} \text{Test of Difference} &= \frac{2.201 - 1.829}{\sqrt{\frac{1.624}{379} + \frac{1.428}{386}}} &= 4.16; \text{ significant at } &= .001 \\ \text{Male - Pre vs. Post} & \end{aligned}$$

$$\begin{aligned} \text{Test of Difference} &= \frac{2.44 - 2.016}{\sqrt{\frac{2.45}{131} + \frac{1.644}{80}}} &= 2.14; \text{ significant at } &= .05 \\ \text{Female - Pre vs. Post} & \end{aligned}$$

Table 4.9
STATED LIKELIHOOD OF ENLISTMENT
BEFORE AND AFTER AFES EXAMINATIONS

	Definitely ←-----> Definitely Will Join Will Not Join						Total	Mean	σ^2	σ
	1	2	3	4	5	6				
Pre-* Test	238 58.3%	75 18.4%	60 14.7%	21 5.1%	14 3.4%	408 1.21	408	1.766	1.21	1.1
Post-* Test	253 61.1%	65 15.7%	56 13.5%	22 5.3%	18 4.3%	414 1.31	414	1.757	1.31	1.14
Total	491	140	116	43	32	822	822			

$$\text{Test: } t = \frac{1.766 - 1.757}{\sqrt{\frac{1.21}{408} + \frac{1.31}{414}}} = 0.115 \text{ (not significant)}$$

2. Before/After AFEES Examinations

In general, there is no similar pattern of increasing stated likelihood to enlist exhibited by respondents studied before or after AFEES examination procedures. The responses are summarized in Table 4.9.

When the samples are segregated by sex, Tables 4.10 and 4.11 show that men's stated intentions are unaffected by AFEES procedures, but that women do report increasing probability of joining after the experience (significant at $\alpha = .05$).

Table 4.10

STATED LIKELIHOOD OF ENLISTMENT
BEFORE AND AFTER AFES EXAMS
BY SEX

MEN

Definitely Will Join <-----> Definitely Will Not Join

	1	2	3	4	5	Total
Pre-Test	212 60.2%	68 19.3%	47 13.4%	16 4.5%	9 2.6%	352 100%
Post-Test	215 61.1%	55 15.6%	48 13.6%	19 5.4%	15 4.3%	352 100%
Total	427	123	95	35	24	704

WOMEN

Definitely Will Join <-----> Definitely Will Not Join

	1	2	3	4	5	Total
Pre-Test	25 46.3%	7 13.0%	13 24.1%	5 9.3%	4 7.4%	54 100%
Post-Test	37 62.7%	10 16.9%	7 11.9%	3 5.1%	2 3.4%	59 100%
Total	62	17	20	8	6	113

Table 4.11
SIGNIFICANCE TESTS
OF DATA IN TABLE 4.10

	MALE		FEMALE	
	Pre-Test	Post-Test	Pre-Test	Post-Test
Mean	1.7	1.762	2.188	1.696
Variance	1.056	1.291	1.726	1.177

$$\begin{aligned} \text{Test of Difference} &= \frac{1.7 - 1.762}{\sqrt{\frac{1.056}{352} + \frac{1.291}{352}}} \\ \text{Male - Pre vs. Post Test} &= -0.76 \text{ (not significant)} \end{aligned}$$

$$\begin{aligned} \text{Test of Difference} &= \frac{2.188 - 1.696}{\sqrt{\frac{1.726}{54} + \frac{1.177}{59}}} \\ \text{Female - Pre vs. Post Test} &= 2.16; \text{ significant at } \alpha = .05 \end{aligned}$$

SECTION 5: MULTIVARIATE ANALYSIS

A. Factor Analysis of Life Goals

Each respondent to both telephone and written surveys was asked to consider a series of life or career goals that might be important to him or her over the next few years. For each goal, as it was presented, respondents were asked to indicate whether it is "very important," "important," or "not important." A descriptive analysis of the survey populations' responses is found in Sections 2-D and 4.A.

This Section assesses the degree to which the various life goals are related to each other. Do respondents who respond in a certain way to one of the goals tend to respond in any predictable way to other goals? For example, do people who feel an obligation or desire serve the country also tend to place a high value on having a position of leadership? If it is possible to discover such relationships, if there is a discernible pattern to the responses, then the ten life-goal "dimensions" can be compressed into a smaller set of life-goal groups, or factors. These can be addressed in further evaluation of recruiting efforts.

If there appears to be only a weak association between responses to the various career goals, then it must be concluded that potential recruits think about their futures in a relatively complex way, and that positive impressions about any one goal will not necessarily suggest similar good impressions on others. This also suggests that all ten of the life-goal questions add significant information about the attitudes of individual respondents.

The technique used for this evaluation is factor analysis.^{*} A discussion of Table 5.1, the basic output the program used, should suffice for a useable understanding of the results.

* Factor analysis has two primary functions in data analysis. One function is to identify underlying latent traits that may exist in the data; the other is simply to reduce the number of variables to a smaller set. In reducing the number of variables factor analysis attempts to retain as much of the information conveyed by the original variables as possible. In addition, a useful output of this procedure is orthogonal (uncorrelated) components.

A factor is a variable or component that is not directly observable, but is a functional combination of the input variables. Factor scores are the output values for each variable, derived from the variables that are associated with the factors. These scores can be thought of as transformed original variables.

Interpretation of the factors is based on their factor loadings, which are the correlations between factors and the original variables. It is from the factor loadings that we can judgementally label the output factors.

Variance explained is a summary measure indicating how much of the total original variance is explained by individual factors. In discussing the variance explained, the notions of eigenvalues and eigenvectors are used. The eigenvalues are a measure of the overall contribution of each variable of the factor's variance. Thus, the sum of the eigenvalues is the total variance.

The basic, unrotated factor analysis uses principal components analysis. The objective of principal components is to generate a series of factors, each explaining as much variance as possible. The procedure continues until there are as many factors generated as variables. Varimax rotation is a scheme designed to aid in the final interpretation of the calculated factor loadings. This scheme searches for a set of factor loadings such that each factor has loadings close to zero, and some close to +1.

The last issues of concern is choosing the number of factors to use. One common rule of thumb is that any principal component (factor) should account for more variance than any single variable (eigenvalue > 1).

For more detailed discussion of factor analysis and the mathematical procedure used refer to the following:

Aaker, David (1980), Marketing Research, New York, John Wiley.

Kim, Jae-On and Charles Mueller (1978), Introduction to Factor Analysis, Beverly Hills, Ca, Sage Publications.

Nie, Normal et.al. (1975), Statistical Package for the Social Sciences, New York, McGraw Hill.

Table 5.1

FACTOR ANALYSIS OF LIFE GOALS FOR MEN

<u>Goals</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>	<u>Factor 4</u>
Leadership	-0.11	0.43	0.06	0.11
Skill	-0.09	0.28	0.36	-0.22
Travel	-0.03	0.16	-0.08	0.51
Security	0.11	-0.09	0.48	-0.15
Nice Time	0.00	-0.09	-0.07	0.63
Nice People	0.43	-0.32	0.12	0.17
Challenging	0.52	0.05	-0.25	0.05
Good Pay	-0.22	-0.09	0.55	0.17
Development	0.47	-0.00	-0.01	-0.14
Service to Country	-0.03	0.61	-0.19	-0.01
Eigenvalue	2.5	1.2	1.1	1

Table 5.2

FACTOR ANALYSIS OF LIFE GOALS FOR WOMEN

<u>Goals</u>	<u>Factor 1</u>	<u>Factor 2</u>	<u>Factor 3</u>
Leadership	0.32	-0.08	0.03
Skill	0.28	0.13	-0.22
Travel	0.03	0.01	0.48
Security	0.36	-0.04	-0.04
Nice Time	-0.05	-0.1	0.67
Nice People	-0.3	0.52	0.19
Challenging	-0.08	0.44	-0.10
Good Pay	0.31	-0.13	0.11
Development	0.03	0.37	-0.08
Service to Country	0.37	-0.17	-0.01
Eigenvalue	2.8	1.2	1.1

Recall that a factor (as used in this analysis) is a group of life goals that seem to be related. Relatedness, however, is not a yes-or-no question; it is a matter of degree. To find a factor, the algorithm searches among all the life goals, and selects the grouping with the greatest differences in strength of relations between individual members. In column one of Table 5.1, for example, we see that "Nice People," "Challenging," and "Self Development" are fairly strongly related to each other (with so-called factor scores of 0.43, 0.52, and 0.47, respectively). The remaining life goals are relatively unrelated to the three, and to each other. We say, therefore, that the three high-scoring elements contribute strongly to Factor One, and that the remaining elements contribute only weakly.

Factor Two is developed in much the same way. In addition to the criterion that the factor contain some strong inter-connection between elements, the algorithm also seeks to develop a second factor which is not related to the first. In this way, the factors may be perceived as individual "dimensions" on which may be expressed the information provided by the original life-goal questions. The algorithm tries to achieve dimensions that are as nearly "perpendicular" as possible.

One of the elements in Factor Two (Nice People) has a fairly high negative value. This suggests that when respondents indicate a strong wish to serve the country (which has a positive score in Factor Two), they will tend to discount the importance of serving with Nice People.

At the bottom of each column in the table is an "eigenvalue" score. This is a measure of the relative strength and explaining power of the developed factor. The eigenvalue for Factor One is 2.5; this is significant, but not large compared to eigenvalues typically computed in factor analyses. The

remaining factors necessarily have smaller and smaller eigenvalues, since the algorithm forms the strongest factors first. Only factors with eigenvalues larger than 1.0 are considered significant; no factors with smaller eigenvalues are presented.

To understand the nature of a factor, we try to summarize those components which most strongly contribute to it. The life goals which primarily contribute to Factor One (Males) are Challenging, Self-Development, and Nice People. These elements seem to be related to the unifying theme of "Job Satisfaction," and we assign that title to the factor.* Factor Two (Males) is comprised most strongly of Service to Country, then by Leadership; the need to work with Nice People is unimportant on this dimension. We call Factor Two, "Aggression/Responsibility."** "Practicality" seems to capture the nature of Factor Three (Males);* it is most heavily comprised of Good Pay, Job Security, and the desire to develop a Skill or Trade (There seems to be a moderate negative correlation with the desire for Challenging Work). The weakest of the males' factors, Factor Four, has a high factor score for Nice Time and for a desire to Travel; it has been dubbed, "Enjoyment."**

The factor analysis, then, has provided insight into respondents' life goals as measured by the ten possibilities suggested on the questionnaire. We see that consideration of just four dimensions -- job satisfaction, aggression/responsibility, practicality and enjoyment -- may be useful in explaining group behavior. However, the factor analysis also has indicated (via the eigenvalues) that these dimensions are not sufficiently strong and certain to permit total disregard of their individual, constituting elements.

*The factors' designations are based not on any mathematical or analytical method, but are formed on a judgemental basis by the researcher.

The results of a factor analysis of females' responses to the life-goal importance questions is presented in Table 5.2. Note that Factor Two (Females) is very similar to Factor One (Males). The "Enjoyment" factor for women is also very similar to the men's, again comprising the desires for Travel and a Nice Time.

For the women, a new and different factor has been constructed as the base for others. Factor One (Females) has some similarities to the factor (Males) termed "Aggression/Responsibility." Both include strong contribution from the elements of Leadership and Service; both are negatively correlated with the importance of working with Nice People. However there is strong connection, in the minds of women, between such goals as developing leadership skills and serving the country with such goals as finding Job Security, earning Good Pay, and learning a valuable Skill or Trade. Men perceive these several goals along two distinct dimensions, while women tend to think of them as strongly related.

B. Two-Group Discriminant Analysis -- Probable Joiners/Probable Non-Joiners

The basic idea behind two-group discriminant analysis is to reduce what may originally be a large set of multiple (and correlated) measurements on a set of persons or objects, to a single linear composite with values that maximally distinguish between the two groups.*

The question in mind is this: Is there any subset of the collected data that distinguishes those respondents who indicate a likelihood of Navy enlistment from those who do not? The technique of two-group discriminant analysis can lead to an answer. The mathematics may be found in the references;** here we provide only an explanation of findings.

* Paul E. Green, Analyzing Multivariate Data, Hinsdale, IL, 1978, p. 143.

** Green, op.cit.

Klecka, William, Discriminant Analysis, Beverly Hills, CA, 1980

Nie, Norma, et.al., Statistical Package for the Social Sciences, N.Y., 1975.

Before a two-group discriminant analysis can be undertaken, each respondent must be classified into one of the two classes. This is accomplished through examination of the answers to Question 14c:

Table 5.3
LIKELIHOOD OF JOINING MILITARY

	Men	Women
Definitely Join	34 5.6%	11 1.7%
Probably Join	64 10.5%	27 4.2%
Probably Not	139 22.8%	95 14.9%
Definitely Not	326 53.5%	485 75.9%
Unsure	46 7.6%	21 3.3%
TOTALS	609 100%	639 100%

Table 5.4 presents the coefficients of a standardized discriminant function for the two groups of male respondents, probable joiners and probable non-joiners. In general, the signs and magnitudes of the coefficients suggest characteristics which are associated with each other, or which are mutually disassociated. A negative coefficient suggests that an increase in the variable itself will decrease the probability of joining; a positive coefficient suggests an increasing tendency to join with increases in the variable.

Table 5.4

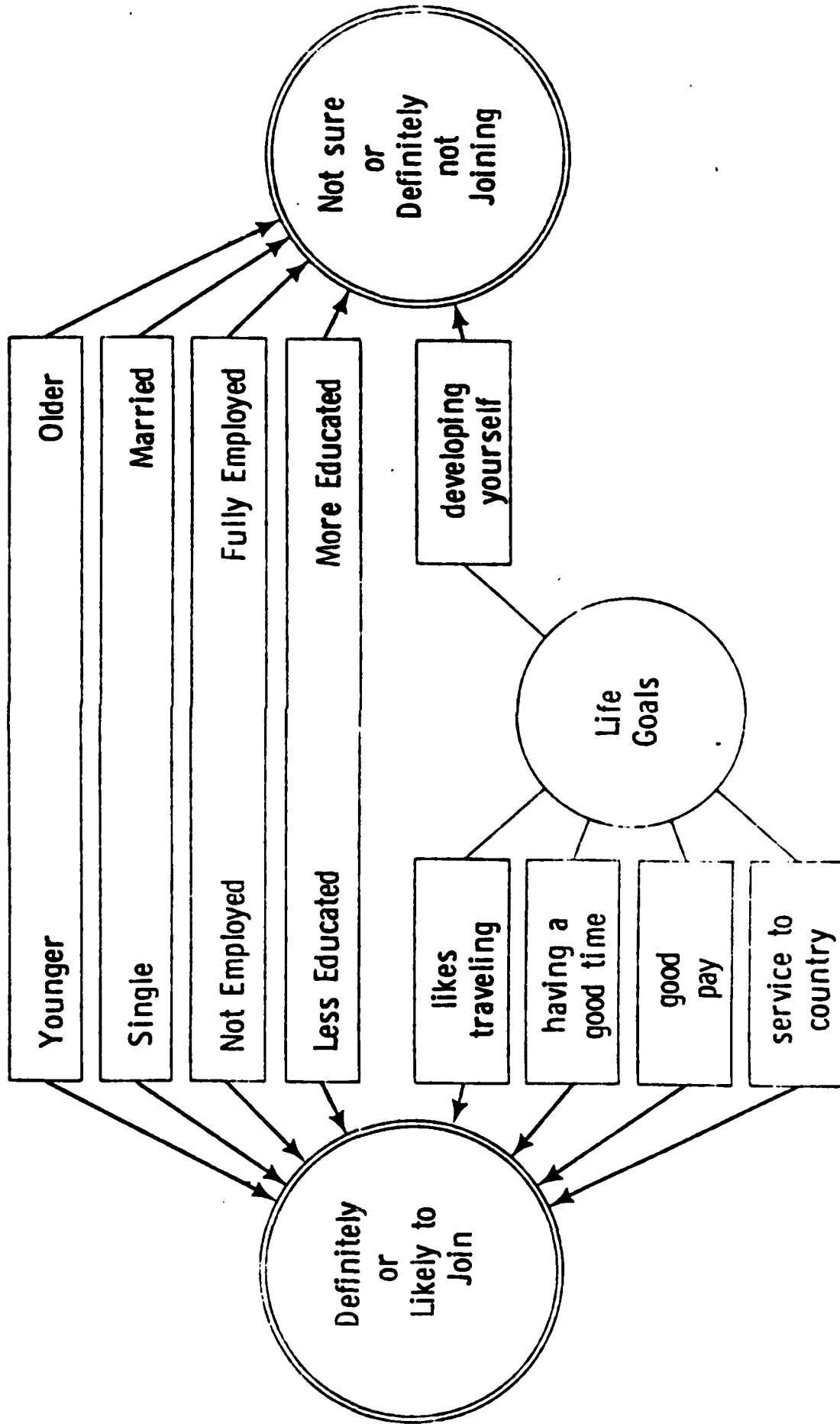
STANDARDIZED DISCRIMINANT FUNCTION (Males)

Age	-0.3
Marital Status	-0.13
Employment Status	0.14
School Type	-0.42
Life Goals	travel 0.19
	good time 0.14
	good pay 0.22
	service to country 0.63
	development -0.21
Centroids:	Joining Group 0.75
	Not Joining Group -0.14

A diagrammatic interpretation of the discriminant results is offered as Figure 5.5. The men who report a strong likelihood of enlistment in a branch of the military are in general likely to be younger and less educated than those who indicate a reduced likelihood of enlistment. The joining group is more likely to be unemployed.

Figure 5.5: TWO GROUP PROBABILITY TO JOIN MILITARY DISCRIMINANT ANALYSIS

MALES



Prediction Power: 68.89%

Men who are likely to enlist in the military assign more importance to the life goals of Travel, having a Good Time, receiving Good Pay, and Service to Country than they do to others.* By contrast, those who report a reduced chance of joining tend to assign strong importance to the goal of Self Development.

The discriminant analysis is not able to perfectly establish the rules for separating probable joiners and non-joiners. The degree to which the developed discriminant function successfully predicts the actual answers of the total sample suggests the predictive power of the analysis. The percentages of actual versus predicted responses are shown in Table 5.6.

Table 5.6
PREDICTIVE POWER OF DISCRIMINANT FUNCTION (MALES)

		Predicted	
		Joining	Not Joining
Actual:	Joining	72.3%	27.7%
	Not Joining	31.8%	68.2%

Overall: 68.89%

A similar two-group discriminant analysis was performed on the sample of female respondents. The discriminant function coefficients are shown in Table 5.7, and a diagram of its interpretation is presented as Figure 5.9. Here we see that, like men, women who indicate a high probability of enlistment are also more likely to be single and less educated. We find in addition

* See Sections 2-D, 4-A, and 5-A.

that family income may play a significant role. Women who indicate a likelihood of enlistment are more likely to come from poorer families. For the women, the two life goals which are positively correlated with a stated intention to join the military are a desire to Travel and to Serve the Country. Those women who attach high importance to Job Security, Challenging Work, and to working with Nice People are less likely to enlist. The prediction power of this discriminant analysis is presented in Table 5.8. (It should be noted that only half as many women as men indicated an intention to join the military. For this reason, although the predictive power of the analysis is moderately high, at almost 75%, the universality of the findings cannot be assumed.)

Table 5.7

STANDARDIZED DISCRIMINANT FUNCTION (FEMALES)

Marital Status	0.61
Personal Income	0.17
School Type	-0.23
Life Goals	travel 0.18
	good time -0.16
	good pay -0.18
	service to country -0.18
	development 0.60
Centroids:	Joining Group 1.15
	Not Joining Group -0.07

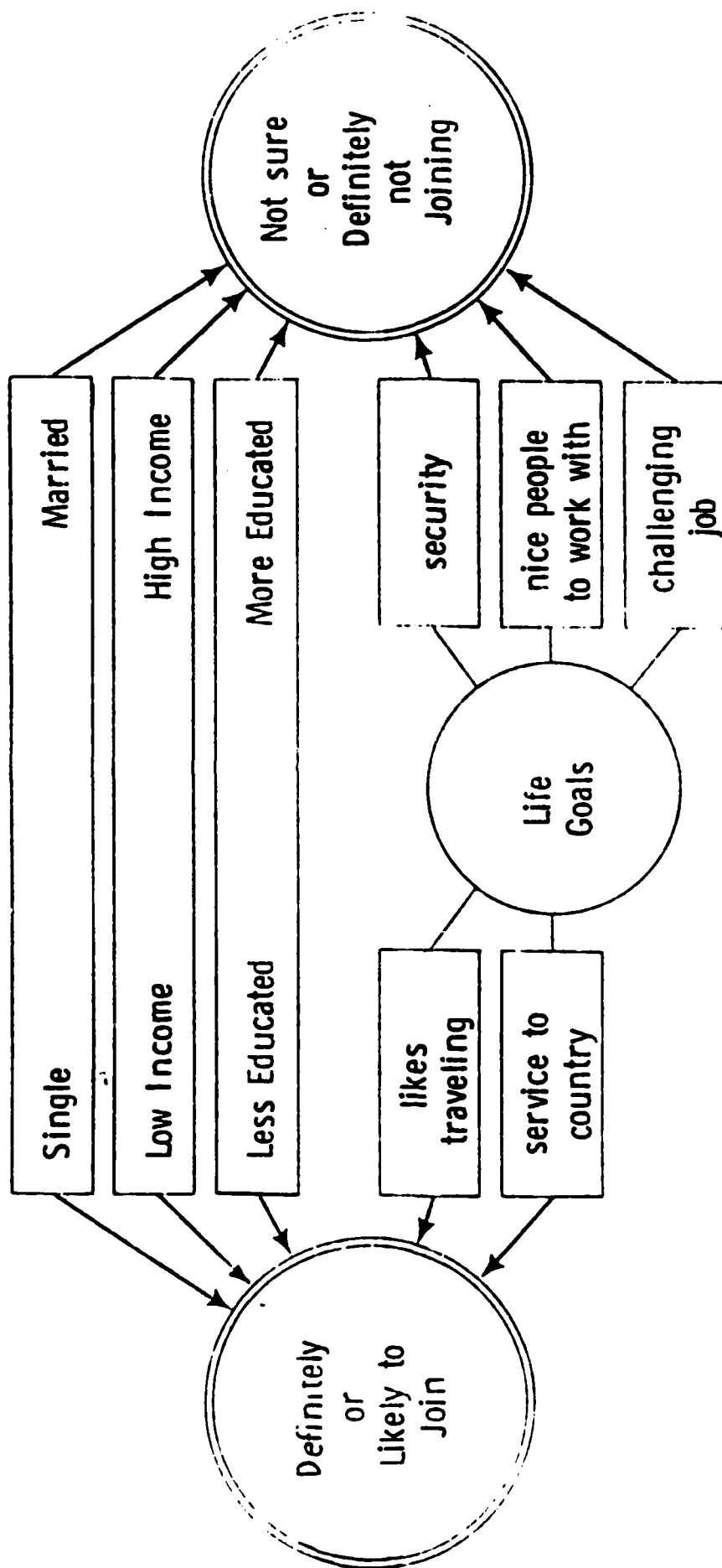
Table 5.8

PREDICTIVE POWER OF DISCRIMINANT FUNCTION (FEMALES)

		Predicted	
		Joining	Not Joining
Actual:	Joining	82.4%	17.6%
	Not Joining	26.8%	73.2%
Overall:		73.77%	

Figure 2.2: Two Group Logistic Regression Analysis

FEMALES



Prediction Power: 73.77%

C. Segmentation Analysis

This multivariate analytical study is motivated by the question: "Is there any way in which groups of respondents can be separated from the population, so that each group is distinctly different from the others in its responses regarding the importances of life goals,* and so that the members of each group are relatively like each other?" The complete details of the cluster analysis performed are contained in Volume VII of this report, The Wharton-Administered Navy Tracking Study: A Segmentation Approach. A summary of findings is presented here.

As in the analyses presented elsewhere in this report, male and female respondents are segregated prior to mathematical evaluation, to be grouped or segmented independently. The number of clusters into which the respondents are grouped is determined subjectively, through an evaluation of the calculated similarities within and differences between groups. It should be clear that if the total number of respondents is constant, then as the number of groups increases the relative difference between groups decreases, while the similarity among all members of individual groups increases. Seven distinct segments among the male respondents and five segments among females were identified, striking a balance between the two desirable characteristics. The relative sizes of the segments are shown in Table 5.10.

* Summary information regarding the life goals of survey respondents is presented in Section 2-D.

Table 5.10
SEGMENT SIZES--CLUSTER ANALYSIS

Segment	Males		Females	
	Number	%	Number	%
1	44	7.6	131	21.5
2	59	10.1	130	21.4
3	90	15.5	92	15.1
4	112	19.3	133	21.9
5	92	15.8	122	20.1
6	94	16.2	---	---
7	90	15.5	---	---
	<u>581</u>	<u>100%</u>	<u>601</u>	<u>100%</u>

Figure 5.11 presents the life-goal "profiles" of the various derived segments.

Figure 5.11
LIFE GOAL CHARACTERISTICS OF DERIVED SEGMENTS

Segment Number	WOMEN					MEN						
	1	2	3	4	5	1	2	3	4	5	6	7
Security	+	+		+	+	+	+	+	+	+	+	+
Self-Development	+	+	+	+	+	+	+		+	+	+	+
Good Pay	+	+			+	+		+	+		+	+
Trade of Skill	+		+		+	-	+	+	+	+	+	+
Nice People	+	+	+	+	+	+		+		+		+
Challenging Work		+	+			+	+	+	+	+	+	+
Service to Country		-		+		-			+	-		-
Leadership			-		-	-				-	+	
Travel	-	+	-		-		-	+	+	-	-	
Good Time	-		-		-		-	-		-	-	+

+ = Very Important
- = Not Important

Descriptive statistics of the demographic characteristics of the segments are presented in the separate report referenced above. Some of the summary findings are:

Males

- Segment 1. more married men, higher family incomes
- Segment 2. more likely single, White; less education
- Segment 3. more likely to be high school graduates
- Segment 4. higher proportion Black, unemployed; lower family incomes
- Segment 5. high unemployment ratio
- Segment 6. no particular distinction
- Segment 7. more likely married; older than average

Females

- Segment 1. no distinction
- Segment 2. lower family incomes; more likely to have education beyond high school
- Segment 3. higher family incomes; also more likely to have finished college
- Segment 4. younger; more Blacks; employed part time; less education
- Segment 5. less likely to be single; high school graduate

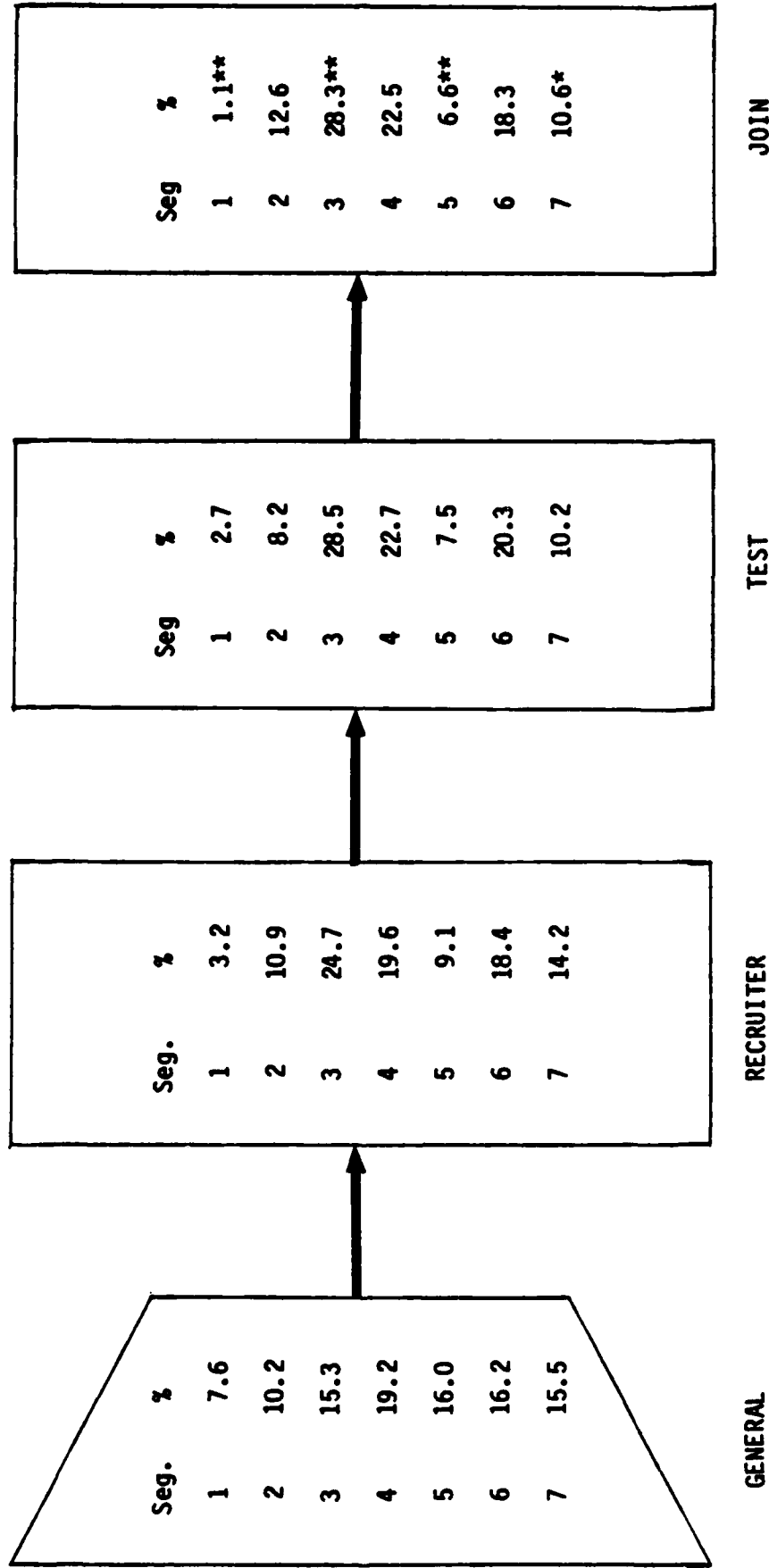
Having identified distinct market segments by multivariate evaluation of life goals, we next want to determine if the Navy is relatively more attractive to some segments than to others. To accomplish this, we first develop a discriminant function which can classify a respondent into one of the segments through evaluation of answers to the life goal questions. Having verified the accuracy of this "sorting" function, it can now be used to determine the composition of samples taken at several stages in the recruiting process.*

Tables 5.12 and 5.13 present the results of this analysis. The relative proportions of certain segments clearly do change across the recruiting cycle. In Table 5.12, for example, we can see that although Segment 1 represents 7.6 percent of the population, the proportion drops to 3.2 percent of those who see recruiters, and only 1.1 percent of those who eventually sign contracts. On the other hand, while 15.3 percent of the general population fall into Segment 3, almost 30 percent of those signing contracts are of this type. Both of these differences are statistically significant at the .01 level.

Although this study does distinguish differences in demographics, attitudes and behavior between the various segments, it is not possible to determine whether certain segments are inherently more attractive to the Navy, nor whether it might be possible to attract such segments differentially.

* For details on the method and mathematics of this analysis, refer to Volume VII of this report, The Wharton-Administered Navy Tracking Survey: A Segmentation Approach.

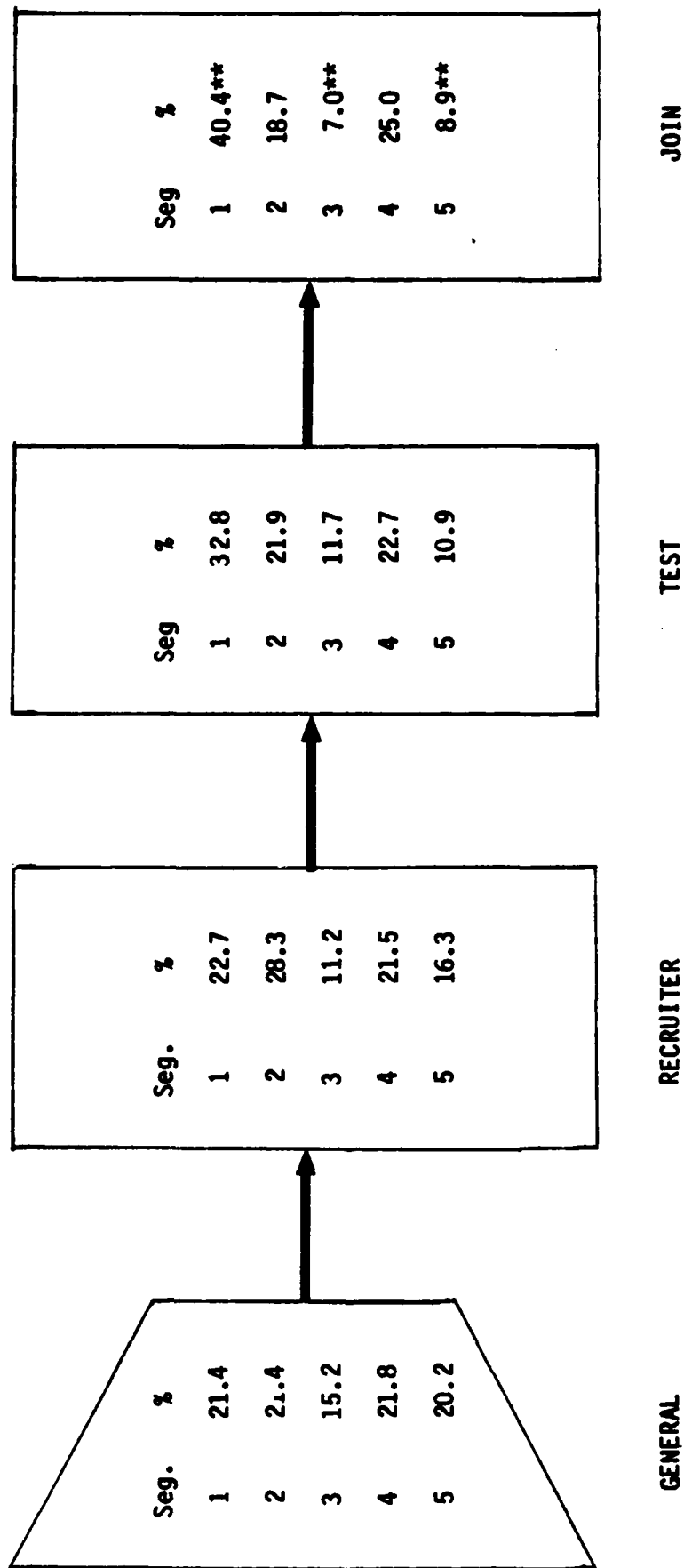
Exhibit 5.12
OVERALL WAVE I FLOW OF MALE SEGMENTS



* Significant at .05 level
** Significant at .01 level

Exhibit 5.13

OVERALL WAVE I FLOW OF FEMALE SEGMENTS



** Significant at .01 level

APPENDIX 3.1

An Examination of Progression Rates for Men and Women in the Recruiting Process

Comparison of 3 Groups

1. Those with recruiter contacts
2. Those sitting in tests
3. Those signing contracts

Difference with Respect to Sex

DTYP	SEX		ROW TOTAL
	COUNT		
	ROW %		
	COL %		
	TOT %		
1		1	2
	814	216	1030
	79.0	21.0	38.8
	35.9	55.7	
2	30.7	8.1	
	730	114	844
	86.5	13.5	31.8
	32.2	29.4	
3	27.5	4.3	
	722	58	780
	92.6	7.4	29.4
	31.9	14.9	
COLUMN TOTAL		2266	388
		85.4	14.6
			2654
			100.0

The diagram shows the proportions of the sample at each stage. It also illustrates the higher "mortality" rate of females in the recruitment process. The percentage of females is as high as 21% of the recruiter contact group. It drops to 13.5% of the test-takers, and to 7.4% of those who eventually sign contracts.

To illustrate the difference between men's and women's "progression rates" in the recruitment process, we proceed as follows:

1. From Recruiter to Test

$$H_0: P_1 = P_2$$

$$H_1: P_1 > P_2$$

where

P_1 and P_2 are the proportions of women having recruiter contact and taking tests respectively.

$$\text{pooled } \bar{p} = \frac{216 + 114}{1030 + 844} = 0.176$$

$$\begin{aligned} \text{hence test statistics} &= \frac{0.21 - 0.135}{\sqrt{0.176 \times 0.824 \left(\frac{1}{1030} + \frac{1}{844} \right)}} \\ &= 4.24 \end{aligned}$$

The difference is significant at $\alpha = 0.01$.

We thus conclude that the percentage of women in group 1 is significantly larger than that in group 2.

Now suppose that the total population having recruiter contact is N ,

	<u>Men</u>	<u>Women</u>
Recruiter	79% of N	21% of N
	$x_1\%$ ↓	$x_2\%$ ↓
Test	86.5% of T	13.5% of T

and that the population taking the test is T. Further, let x_1 and x_2 be respectively the percentages of males and females who, after recruiter contact, take the test.

We have the following relationships:

$$(1) \quad (0.79 N) \times x_1\% = 0.865 T$$

and

$$(2) \quad (0.21 N) \times x_2\% = 0.135 T$$

(1) + (2) gives

$$\frac{0.79}{0.21} \frac{x_1}{x_2} = \frac{0.865}{0.135}$$

$$\text{or } x_2 = 0.587 x_1$$

That is to say, if $x_1\%$ of males who have recruiter contact eventually take the test, only about 0.6 $x_1\%$ of females do so. If "progression" rate is defined to be the rate of conversion from one state to another (here, it is from recruiter to test), the female progression rate is only about 60% of that of the males.

2. From Test to Contract

$$H_0: P_2 = P_3$$

$$H_1: P_2 > P_3$$

where

P_2 and P_3 are the proportions of females taking test and signing contracts respectively.

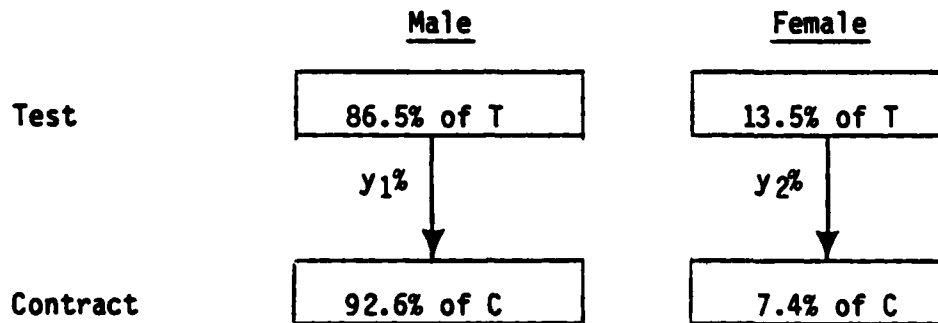
$$\text{pooled } \bar{p} = \frac{114 + 58}{844 + 780} = 0.106$$

$$\begin{aligned} \text{test statistics} &= \frac{0.135 - 0.074}{\sqrt{0.106 \times 0.894 \left(\frac{1}{844} + \frac{1}{780} \right)}} \\ &= 3.99 \end{aligned}$$

The difference is significant at $\alpha = 0.01$.

We thus conclude that the percentage of females in group 2 is significantly larger than that in group 3.

Again suppose the total population who eventually signs contracts is C. Let y_1 , y_2 be the percentages of males and females respectively who after taking the test, sign contracts.



The following relationships can also be obtained:

(3) $(0.865 T) \times y_1\% = 0.926 C$

and

(4) $(0.135 T) \times y_2\% = 0.074 C$

(3) + (4) gives

$$\frac{0.865}{0.135} \frac{y_1}{y_2} = \frac{0.926}{0.074}$$

or $y_2 = \frac{0.865}{0.926} \times \frac{0.074}{0.926} y_1 = 0.512 y_1$

That is to say, if $x_1\%$ of males who take the tests eventually sign contracts, about $0.5 x_1\%$ of females do so. In other words, the progression rate of females from test to contracts is only half that of the males.

APPENDIX 4.1

Table A-4.1

IMPORTANCE OF LEADERSHIP TO PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	229 28.4%	426 52.9%	151 18.7%	806 100%
Test Takers	243 33.8%	376 52.4%	99 13.8%	718 100%
Contract Signers	266 36.9%	374 51.9%	80 11.1%	720 100%

Chi-Square = 24.40544 with 4 degrees of freedom
Significance = 0.0001

WOMEN

	Very Important	Important	Not Important	Total
	57 26.5%	105 48.8%	53 24.7%	215 100%
	30 26.5%	62 54.9%	21 18.6%	113 100%
	21 36.2%	31 53.4%	6 10.3%	58 100%

Chi-Square = 7.10250 with 4 degrees of freedom
Significance = 0.1306

Table A-4.2

IMPORTANCE OF SKILL OR TRADE TO
PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	602 74.2%	195 24.0%	14 1.7%	811 100%
Test Takers	550 76.6%	153 21.3%	15 2.1%	718 100%
Contract Signers	616 85.7%	96 13.4%	7 1.0%	719 100%

Chi-Square = 33.18281 with 4 degrees of freedom
Significance = 0.0000

WOMEN

	Very Important	Important	Not Important	Total
	156 72.2%	55 25.5%	5 2.3%	216 100%
	88 77.9%	23 20.4%	2 1.8%	113 100%
	52 89.7%	6 10.3%	0 0.0%	58 100%

Chi-Square = 8.16179 with 4 degrees of freedom
Significance = 0.0858

Table A-4.3

IMPORTANCE OF TRAVEL TO
PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	320 39.6%	347 42.9%	141 17.5%	808 100%
Test Takers	309 76.6%	320 21.3%	88 2.1%	717 100%
Contract Signers	359 49.8%	304 42.2%	58 8.0%	721 100%

Chi-Square = 36.30206 with 4 degrees of freedom
Significance = 0.0000

WOMEN

	Very Important	Important	Not Important	Total
	85 39.4%	95 44.0%	36 16.7%	216 100%
	52 77.9%	54 20.4%	6 1.8%	112 100%
	25 43.1%	30 51.7%	3 5.2%	58 100%

Chi-Square = 12.16231 with 4 degrees of freedom
Significance = 0.00162

Table A-4.4

IMPORTANCE OF JOB SECURITY TO
PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	637 78.4%	154 19.0%	21 2.6%	812 100%
Test Takers	554 77.4%	146 20.4%	16 2.2%	716 100%
Contract Signers	616 85.6%	95 13.2%	9 1.3%	720 100%

Chi-Square = 19.08092 with 4 degrees of freedom
Significance = 0.0008

WOMEN

	Very Important	Important	Not Important	Total
	176 81.5%	35 16.2%	5 2.3%	216 100%
	93 83.0%	14 12.5%	5 4.5%	112 100%
	48 82.8%	8 13.8%	2 3.4%	58 100%

Chi-Square = 1.87545 with 4 degrees of freedom
Significance = 0.7587

Table A-4.5

IMPORTANCE OF HAVING A GOOD TIME TO PARTICIPANTS
IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	121 15.1%	285 35.5%	397 49.4%	803 100%
Test Takers	106 14.7%	263 36.5%	352 48.8%	721 100%
Contract Signers	105 14.6%	265 36.8%	350 48.6%	720 100%

Chi-Square = 0.32371 with 4 degrees of freedom
Significance = 0.9882

WOMEN

	Very Important	Important	Not Important	Total
	36 16.7%	72 33.5%	107 49.8%	215 100%
	16 14.0%	36 31.6%	62 54.4%	114 100%
	5 8.8%	17 29.8%	35 61.4%	57 100%

Chi-Square = 3.44347 with 4 degrees of freedom
Significance = 0.4865

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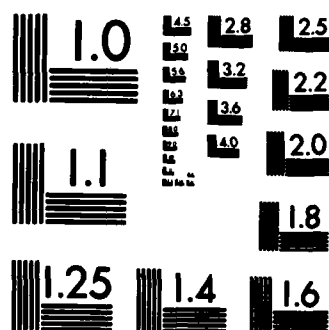
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MICROCOPY RESOLUTION TEST CHART
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Table A-4.6

IMPORTANCE OF NICE PEOPLE TO WORK WITH TO PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	371 45.9%	381 47.2%	56 6.9%	808 100%
Test Takers	325 44.9%	363 50.1%	36 5.0%	724 100%
Contract Signers	360 49.9%	331 45.9%	30 4.2%	721 100%

Chi-Square = 9.42535 with 4 degrees of freedom
Significance = 0.0513

WOMEN

	Very Important	Important	Not Important	Total
	106 49.3%	94 43.7%	15 7.0%	215 100%
	62 54.4%	45 39.5%	7 6.1%	114 100%
	29 50.9%	24 42.1%	4 7.0%	57 100%

Chi-Square = 0.78131 with 4 degrees of freedom
Significance = 0.9409

Table A-4.7

**IMPORTANCE OF CHALLENGING JOB TO
PARTICIPANTS IN RECRUITING PROCESS**

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	395 48.8%	360 44.5%	54 6.7%	809 100%
Test Takers	374 51.6%	314 43.3%	37 5.1%	725 100%
Contract Signers	389 54.0%	317 44.0%	15 2.1%	721 100%

Chi-Square = 19.57475 with 4 degrees of freedom
Significance = 0.0006

WOMEN

	Very Important	Important	Not Important	Total
	116 54.0%	88 40.9%	11 5.1%	215 100%
	66 57.9%	42 36.8%	6 5.3%	114 100%
	36 62.1%	22 37.9%	0 0.0%	58 100%

Chi-Square = 3.95330 with 4 degrees of freedom
Significance = 0.4214

Table A-4.8

IMPORTANCE OF GOOD PAY TO
PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	557 68.8%	238 29.4%	15 1.9%	810 100%
Test Takers	515 71.0%	198 27.3%	12 1.7%	725 100%
Contract Signers	497 68.9%	220 30.5%	4 0.6%	721 100%

Chi-Square = 6.94111 with 4 degrees of freedom
Significance = 0.1390

WOMEN

	Very Important	Important	Not Important	Total
Recruiter Contact	128 59.5%	81 37.7%	6 2.8%	215 100%
Test Takers	73 64.0%	36 31.6%	5 4.4%	114 100%
Contract Signers	35 60.3%	19 32.8%	4 6.9%	58 100%

Chi-Square = 3.24503 with 4 degrees of freedom
Significance = 0.5177

Table A-4.9

**IMPORTANCE OF DEVELOPMENT TO
PARTICIPANTS IN RECRUITING PROCESS**

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	599 74.0%	194 24.0%	17 2.1%	810 100%
Test Takers	514 70.8%	198 27.3%	14 1.9%	726 100%
Contract Signers	582 80.8%	136 18.9%	2 0.3%	720 100%

Chi-Square = 26.32502 with 4 degrees of freedom
Significance = 0.0000

WOMEN

	Very Important	Important	Not Important	Total
	165 76.4%	48 22.2%	3 1.4%	216 100%
	91 79.8%	22 19.3%	1 0.9%	114 100%
	51 87.9%	7 12.1%	0 0.0%	58 100%

Chi-Square = 4.07186 with 4 degrees of freedom
Significance = 0.3964

Table A-4.10

IMPORTANCE OF SERVING COUNTRY TO
PARTICIPANTS IN RECRUITING PROCESS

MEN

	Very Important	Important	Not Important	Total
Recruiter Contact	557 68.8%	238 29.4%	15 1.9%	810 100%
Test Takers	515 71.0%	198 27.3%	12 1.7%	725 100%
Contract Signers	497 68.9%	220 30.5%	4 0.6%	721 100%

Chi-Square = 6.94111 with 4 degrees of freedom
Significance = 0.1390

WOMEN

	Very Important	Important	Not Important	Total
	128 59.5%	81 37.7%	6 2.8%	215 100%
	73 64.0%	36 31.6%	5 4.4%	114 100%
	35 60.3%	19 32.8%	4 6.9%	58 100%

Chi-Square = 3.24503 with 4 degrees of freedom
Significance = 0.5177

APPENDIX 4.2

Hotelling's T^2 Statistic

The T^2 statistic is used to test the overall similarity or difference of two populations among several dimensions at once. As used in the current instance, the null hypothesis, H_0 , is that the two populations considered are generally similar along the axes measured. A finding of "significance" forces rejection of H_0 , and acceptance of the alternate hypothesis that the populations are generally different.

Student's t statistic for testing the difference between the universe means of two independent samples (variances unknown but assumed equal) was generalized for the case of multivariate data by Hotelling (1931). Hotelling's T^2 test employs the pooled within-groups covariance matrix C_w in the following formula:

$$T^2 = \frac{m_1 m_2}{m_1 + m_2} \cdot d' C_w^{-1} d$$

where m_1 , m_2 and d are defined as before. Hotelling showed that with n predictors and $m = m_1 + m_2$ observations, the following relationship holds:

$$\frac{(m - n - 1)}{n(m - 2)} \cdot T^2 \sim F[n, m - n - 1]$$

where means "is distributed as." That is, one can compute T^2 and then convert T^2 to the well-known F distribution with n degrees of freedom in the numerator and $m - n - 1$ degrees of freedom in the denominator.

By way of analogy, recall that one can test for the difference between the means of two independent samples (variances unknown but assumed equal) by:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S^2_w}{m_1} + \frac{S^2_w}{m_2}}}$$

where S_W^2 represents the pooled variances:

$$S_W^2 = \frac{\sum_{i=1}^{n_1} (x_{i1} - \bar{x}_1)^2 + \sum_{i=1}^{n_2} (x_{i2} - \bar{x}_2)^2}{n_1 + n_2 - 2}$$

The multivariate analogue merely replaces S_W^2 by C_W and the scalar quantity $\bar{x}_1 - \bar{x}_2$ by a vector of centroid differences.

Thus, were we to square t , we should have:

$$\begin{aligned} t^2 &= \frac{(\bar{x}_1 - \bar{x}_2)^2}{\frac{S_W^2}{n_1} + \frac{S_W^2}{n_2}} \\ &= \frac{n_1 n_2}{n_1 + n_2} (\bar{x}_1 - \bar{x}_2) (S_W^2)^{-1} (\bar{x}_1 - \bar{x}_2) \end{aligned}$$

and the analogy to T^2 becomes even more transparent.[1]

Generalized T^2 Test for Two Samples with Multivariate Data

Let p be the number of attributes under consideration and let \bar{x}_i be the mean of attribute j in the i th sample. We want to test

$$H_0 = \mu_j^1 = \mu_j^2; j = 1, 2, \dots, p$$

$$H_1 = \text{they are not all equal}$$

Suppose V_1, V_2 are the matrices of observation from the two samples where

rows denote the individuals in the sample and
columns denote the attributes.

[1] Paul E. Green, Analyzing Multivariate Data, Dryden Press, Hinsdale, IL, 1978.

Hence if we let N_1 and N_2 be the sample sizes of the two samples respectively, V_1 and V_2 will be of dimension $N_1 \times p$ and $N_2 \times p$ respectively.

The T^2 computed from the data would be

$$T^2 = \frac{N_1 N_2}{N_1 + N_2} (\bar{y}^{(1)} - \bar{y}^{(2)})' S^{-1} (\bar{y}^{(1)} - \bar{y}^{(2)})$$

where $\bar{y}^{(1)}$ is the column vector of means of attributes from sample 1. S , the sample covariance matrix, is computed by

$$S = \frac{1}{N_1 + N_2 - 2} \left[\sum_{k=1}^{N_1} (y_k^{(1)} - \bar{y}^{(1)}) (y_k^{(1)} - \bar{y}^{(1)})' + \sum_{k=1}^{N_2} (y_k^{(2)} - \bar{y}^{(2)}) (y_k^{(2)} - \bar{y}^{(2)})' \right]$$

where $y_k^{(1)}$ is the column vector of the k^{th} individual's attributes from sample 1.

The test statistic is

$$T^2 \times \frac{N_1 + N_2 - p - 1}{(N_1 + N_2 - 2) p}$$

and is compared to $F_{p, N_1 + N_2 - p - 1}(\alpha)$, where α is the significance level i.e., H_0 will be rejected if

$$\frac{N_1 + N_2 - p - 1}{(N_1 + N_2 - 2) p} T^2 > f_{p, N_1 + N_2 - p - 1}(\alpha)$$

APPENDIX 4.3A

Pairwise Comparisons of Perception of
Navy in Achieving Life Goals
for Males

Key to Tables Presented

TYP = 1. Pre-Recruiter
 2. Post-Recruiter
 3. Pre-Test
 4. Post-Test
 5. DEP-Before
 6. DEP-After
 7. Direct Entry

NHELP = 1. Very Helpful
 2. Helpful
 3. Not Helpful

Pairwise Comparisons TYP = 1 vs 2
 3 vs 4
 2 vs 3
 5 vs 6
 5+6 vs 7

Life Goal 1 = Leadership

COUNT		NHLP1							
ROW	%	1	2	3	4	5	6	7	ROW TOTAL
COL	%	1	2	3	4	5	6	7	
TOT	%	1	2	3	4	5	6	7	
1		109	106	23					398
		47.5	46.7	5.8					17.7
		14.0	22.2	37.1					
		8.4	8.3	1.0					
2		218	182	18					418
		53.2	44.4	2.4					18.2
		16.1	21.7	16.1					
		9.7	8.1	0.4					
3		229	119	12					360
		63.6	33.1	3.3					16.0
		17.0	14.2	19.4					
		10.2	5.3	0.5					
4		226	125	14					365
		61.9	34.2	3.8					16.2
		16.7	14.9	22.6					
		10.0	5.6	0.6					
5		49	17	1					67
		73.1	25.4	1.5					3.0
		3.6	2.0	1.6					
		2.2	0.8	0.0					
6		368	178	1					547
		67.3	32.5	0.2					24.3
		27.2	21.2	1.6					
		16.3	7.9	0.0					
7		72	32	1					105
		48.6	30.5	1.0					4.7
		5.3	3.8	1.6					
		3.2	1.4	0.0					
COLUMN TOTAL		1351	839	62					2252
		60.0	37.3	2.8					100.0

ARE = 77.63402 WITH 12 DEGREES OF FREEDOM. SIGNIFICANCE = 0.0220

Life Goal 2 = Skill or Trade

		NHLP2			ROW TOTAL
COUNT		1	2	3	
ROW #					
COL #					
TOT #					
1		275	113	10	398
		69.1	28.4	2.5	17.8
		15.9	23.4	35.7	
		12.3	5.0	0.4	
2		308	103	7	418
		73.2	25.1	1.7	18.3
		17.3	21.4	25.0	
		13.4	4.6	0.3	
3		270	86	5	361
		74.8	23.8	1.4	16.1
		15.6	17.8	17.9	
		12.0	3.8	0.2	
4		273	77	5	355
		76.9	21.7	1.4	15.8
		15.8	16.0	17.9	
		12.2	3.4	0.2	
5		56	11	0	67
		83.6	16.4	0.0	3.0
		3.2	2.3	0.0	
		2.5	0.5	0.0	
6		469	76	1	546
		85.9	13.9	0.2	24.4
		27.1	15.8	3.6	
		20.9	3.4	0.0	
7		89	16	0	105
		84.8	15.2	0.0	4.7
		5.1	3.3	0.0	
		4.0	0.7	0.0	
COLUMN TOTAL		1732	482	28	2242
		77.3	21.5	1.2	100.0

UARE = 53.53679 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = P.0002

Life Goal 3 = Travel

		NHED3			ROW TOTAL
COUNT		1	2	3	
ROW %					
COL %					
TOT %					
1		250	132	17	399
		62.7	33.1	4.3	17.8
		16.7	19.5	25.4	
		11.1	5.9	0.8	
2		261	136	12	409
		63.8	33.3	2.9	18.2
		17.4	20.1	17.9	
		11.6	6.1	0.5	
3		256	89	17	362
		70.7	20.6	4.7	16.1
		17.1	13.1	25.4	
		11.4	8.0	0.8	
4		230	117	8	355
		64.8	33.0	2.3	15.8
		15.3	17.3	11.9	
		10.2	5.2	0.4	
5		41	25	2	68
		60.3	36.8	2.9	3.0
		2.7	3.7	3.0	
		1.8	1.1	0.1	
6		387	150	10	547
		70.7	27.4	1.8	24.4
		25.8	22.2	14.9	
		17.2	6.7	0.4	
7		76	28	1	105
		72.4	26.7	1.0	4.7
		5.1	4.1	1.5	
		3.4	1.2	0.0	
COLUMN TOTAL		1501	677	67	2245
		66.9	30.2	3.0	100.0

SQUARE = 24.93108 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0152

Life Goal 4 = Security of Job

COUNT		NHMLP4						ROW TOTAL
ROW %	COL %	TOT %	1	2	3			
1			238	138	22		398	
			59.8	34.7	5.5		17.7	
			15.5	21.2	37.9			
			10.6	6.1	1.0			
2			267	136	7		410	
			65.1	33.2	1.7		18.3	
			17.4	20.9	12.1			
			11.9	6.1	0.3			
3			251	106	5		362	
			69.3	29.3	1.4		16.1	
			16.3	16.3	0.6			
			11.2	4.7	0.2			
4			239	102	14		355	
			67.3	28.7	3.9		15.8	
			15.5	15.7	24.1			
			10.6	4.5	0.6			
5			53	13	2		68	
			77.9	19.1	2.9		3.0	
			3.4	2.0	3.4			
			2.4	0.6	0.1			
6			408	132	7		547	
			74.6	24.1	1.3		24.4	
			26.5	20.3	12.1			
			18.2	5.9	0.3			
7			81	23	1		105	
			77.1	21.9	1.0		4.7	
			5.3	3.5	1.7			
			3.6	1.0	0.0			
COLUMN TOTAL			1537	650	58		2245	
			68.5	29.0	2.6		100.0	

CHUARE = 49.54242 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0020

Life Goal 5 = Having A Good Time

		NHHELPS			ROW TOTAL
COUNT		1	2	3	
ROW %					
COL %					
TOT %					
1		101	178	119	398
		25.4	44.7	29.9	17.8
		17.9	17.8	17.8	
		4.5	8.0	5.3	
2		81	191	133	405
		20.0	47.2	32.8	18.1
		14.3	19.1	19.9	
		3.6	8.5	6.0	
3		93	154	113	360
		25.8	42.8	31.4	16.1
		16.5	15.4	16.9	
		4.2	6.9	5.1	
4		94	162	98	354
		26.6	45.8	27.7	15.8
		16.6	16.2	14.6	
		4.2	7.3	4.4	
5		23	26	18	67
		34.3	38.8	26.9	3.0
		4.1	2.6	2.7	
		1.0	1.2	0.8	
6		146	244	159	549
		26.8	44.0	29.2	24.4
		25.8	24.0	23.7	
		6.5	10.7	7.1	
7		27	48	30	105
		25.7	45.7	28.6	4.7
		4.8	8.8	4.5	
		1.2	2.1	1.3	
COLUMN TOTAL		565	499	670	2234
		25.3	44.7	30.0	100.0

SQUARE = 11.32693 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.5025

Life Goal 6 = Nice People to Work With

NHLP6				
COUNT	1	2	3	
ROW	1	2	3	ROW TOTAL
COL	1	2	3	
TOT	1	2	3	
1	104	192	23	399
	46.1	48.1	5.8	17.8
	16.4	18.4	28.0	
	8.2	8.6	1.0	
2	198	288	12	418
	48.3	44.8	2.9	18.3
	17.7	19.2	14.6	
	8.8	8.9	8.5	
3	192	168	10	362
	53.0	44.2	2.8	16.1
	17.1	15.4	12.2	
	8.6	7.1	8.4	
4	166	172	16	358
	46.9	48.6	4.5	15.8
	14.8	16.5	19.5	
	7.4	7.7	8.7	
5	38	29	1	68
	55.9	42.6	1.5	3.0
	3.4	2.8	1.2	
	1.7	1.3	0.0	
6	291	236	18	545
	53.4	43.3	3.3	24.3
	26.0	22.7	22.0	
	13.0	10.5	8.8	
7	51	52	2	105
	48.6	49.5	1.9	4.7
	4.6	5.0	2.4	
	2.3	2.3	0.1	
COLUMN TOTAL	1120	1041	82	2243
	49.9	46.8	3.7	100.0

SQUARE = 16.536 DF WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.1679

Life Goal 7 = Challenging Job

		NHLP7			ROW TOTAL
COUNT		1	2	3	
ROW					
COL					
TOT					
1		227	157	15	399
		56.9	39.3	3.8	17.8
		15.8	20.5	34.9	
		10.1	7.0	0.7	
2		251	151	8	410
		61.2	36.8	2.0	18.3
		17.5	19.7	18.6	
		11.2	6.7	0.4	
3		229	125	6	360
		63.6	34.7	1.7	16.0
		16.0	14.3	14.0	
		10.2	5.6	0.3	
4		224	124	7	355
		63.1	34.9	2.0	15.8
		15.6	16.2	16.3	
		10.0	5.5	0.3	
5		47	19	2	68
		69.1	27.9	2.9	3.8
		3.3	2.5	4.7	
		2.1	0.8	0.1	
6		306	156	4	466
		70.7	28.6	0.7	24.3
		26.9	20.4	9.3	
		17.2	7.0	0.2	
7		70	34	1	105
		66.7	32.4	1.0	4.7
		4.9	4.4	2.3	
		3.1	1.5	0.0	
COLUMN TOTAL		1434	766	43	2243
		63.9	34.2	1.9	100.0

JARE = 29.94594 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0028

Life Goal 8 = Good Pay

		NHLP8			ROW TOTAL
COUNT		1	2	3	
ROW %					
COL %					
TOT %					
1		270	151	28	399
		55.1	37.8	7.0	17.8
		16.5	18.4	32.2	
		9.8	6.7	1.2	
2		226	167	17	410
		55.1	40.7	4.1	18.3
		16.9	20.3	19.5	
		18.1	7.8	0.8	
3		204	141	15	360
		56.7	39.2	4.2	16.1
		15.3	17.2	17.2	
		9.1	6.3	0.7	
4		221	121	13	355
		62.3	38.1	3.7	15.8
		16.6	14.7	14.9	
		9.9	5.4	0.6	
5		42	24	2	68
		61.8	35.3	2.9	3.0
		3.1	2.9	2.3	
		1.9	1.1	0.1	
6		353	143	9	545
		64.8	33.6	1.7	24.3
		26.5	22.3	10.3	
		15.7	8.2	0.4	
7		68	34	3	105
		64.8	32.4	2.9	4.7
		5.1	4.1	3.4	
		3.0	1.5	0.1	
COLUMN TOTAL		1334	821	87	2242
		59.5	36.6	3.9	100.0

CHI SQUARE = 29.59876 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0032

Life Goal 9 - Development

		NHLP9				
COUNT					ROW	
ROW %					TOTAL	
COL %		1	2	3		
TOT %						
1		271	121	8	400	
		67.8	30.3	2.0	17.8	
		16.9	20.0	23.5		
		12.1	5.4	0.4		
2		281	124	5	410	
		68.5	30.2	1.2	18.3	
		17.6	29.5	14.7		
		12.5	5.5	0.2		
3		264	86	10	360	
		73.3	23.9	2.8	16.1	
		16.5	14.2	29.4		
		11.8	3.8	0.4		
4		228	118	8	354	
		64.4	33.3	2.3	15.8	
		14.2	19.5	23.5		
		10.2	5.3	0.4		
5		48	18	1	67	
		71.6	26.9	1.5	3.0	
		3.0	3.0	2.9		
		2.1	0.8	0.0		
6		422	121	2	545	
		77.4	22.2	0.4	24.3	
		26.4	20.0	5.9		
		10.8	5.4	0.1		
7		87	18	0	105	
		82.9	17.1	0.0	4.7	
		5.4	3.0	0.0		
		3.9	0.8	0.0		
COLUMN TOTAL		1691	606	34	2241	
		71.4	27.0	1.5	100.0	

SQUARE = 38.89338 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0001

Life Goal 10 - Serve Country

		NHLP10			
COUNT					
ROW %					ROW TOTAL
COL %					
TOT %		1	2	3	
1		245	141	14	400
		61.3	35.3	3.5	17.8
		17.2	18.6	23.3	
		10.9	6.3	0.6	
2		204	152	14	410
		59.5	37.1	3.4	18.3
		17.1	20.1	23.3	
		10.9	6.8	0.6	
3		230	115	14	359
		64.1	32.0	3.9	16.0
		16.2	15.2	23.3	
		10.3	5.1	0.6	
4		220	126	9	355
		62.0	35.5	2.5	15.8
		15.4	16.6	15.0	
		9.8	5.6	0.4	
5		46	20	2	68
		67.6	29.4	2.9	3.0
		3.2	2.6	3.3	
		2.1	0.9	0.1	
6		369	169	7	545
		67.7	31.0	1.3	24.3
		25.9	22.3	11.7	
		16.5	7.5	0.3	
7		70	35	0	105
		66.7	33.3	0.0	4.7
		4.9	4.6	0.0	
		3.1	1.6	0.0	
COLUMN TOTAL		1424	758	60	2242
		63.5	33.8	2.7	100.0

SQUARE = 17.84943 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.1224

(A) Pre-Recruiter and Post-Recruiter Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre-Re- cruiter	1.58	1.33	1.42	1.46	2.04	1.60	1.47	1.52	1.34	1.42
Post-Re- cruiter	1.49	1.28	1.39	1.37	2.13	1.55	1.41	1.49	1.32	1.44

Result of Multivariate T² Test (using scores):

N1 391

N2 404

COVARIANCE MATRIX

2.69	2.14	2.28	2.32	3.26	2.55	2.37	2.45	2.17	2.34
2.14	1.97	1.97	2.00	2.78	2.19	2.04	2.10	1.88	1.99
2.28	1.97	2.30	2.09	3.03	2.32	2.16	2.18	1.99	2.18
2.32	2.00	2.09	2.32	3.01	2.38	2.18	2.33	2.02	2.11
3.26	2.78	3.03	3.01	4.90	3.41	3.04	3.23	2.82	3.03
2.55	2.19	2.32	2.38	3.41	2.82	2.42	2.54	2.24	2.36
2.37	2.04	2.16	2.18	3.04	2.42	2.37	2.30	2.08	2.21
2.45	2.10	2.18	2.33	3.23	2.54	2.30	2.64	2.14	2.21
2.17	1.88	1.99	2.02	2.82	2.24	2.08	2.14	2.04	2.04
2.34	1.99	2.18	2.11	3.03	2.36	2.21	2.21	2.04	2.37

T SQUARE

14.50573134

TEST STATISTICS

1.434110135

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre-Re- cruiter	47.5	69.1	62.7	59.8	25.4	46.1	56.9	55.1	67.8	61.3
Post-Re- cruiter	53.2	73.2	63.8	65.1	20.0	48.3	61.2	55.1	68.5	59.5

(B) Post-Recruiter and Pre-Test Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Post Re- cruiter	1.49	1.39	1.39	1.37	2.13	1.55	1.41	1.49	1.32	1.44
Pre- Test	1.40	1.34	1.34	1.32	2.06	1.50	1.38	1.48	1.295	1.40

Result of Multivariate T² Test (for scores):

N1 404

N2 356

COVARIANCE MATRIX

2.41	1.96	2.09	2.05	3.09	2.32	2.16	2.27	2.00	2.20
1.96	1.86	1.86	1.84	2.71	2.07	1.92	2.00	1.80	1.91
2.09	1.86	2.18	1.94	2.94	2.19	2.03	2.08	1.92	2.08
2.05	1.84	1.94	2.08	2.89	2.18	1.99	2.15	1.87	1.99
3.09	2.71	2.94	2.89	4.94	3.32	2.98	3.20	2.79	3.02
2.32	2.07	2.19	2.18	3.32	2.64	2.26	2.40	2.14	2.25
2.16	1.92	2.03	1.99	2.98	2.26	2.22	2.17	1.97	2.12
2.27	2.00	2.08	2.15	3.20	2.40	2.17	2.54	2.05	2.17
2.00	1.80	1.92	1.87	2.79	2.14	1.97	2.05	1.98	1.98
2.20	1.91	2.08	1.99	3.02	2.25	2.12	2.17	1.98	2.34

T SQUARE

5.325979329

TEST STATISTICS

0.5262742107

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Post-Re- cruiter	53.2	73.2	63.8	65.1	20.0	48.3	51.2	55.1	68.5	59.5
Pre- Test	63.6	74.8	70.7	69.3	25.8	53.0	63.6	56.7	73.3	64.1

(C) Pre-Test and Post-Test Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- Test	1.40	1.27	1.34	1.32	2.06	1.50	1.38	1.48	1.295	1.40
Post- Test	1.42	1.245	1.38	1.36	2.01	1.58	1.39	1.42	1.38	1.405

Result of Multivariate T² Test (for scores):

N1 356
N2 351

COVARIANCE MATRIX

2.30	1.87	1.99	2.00	2.93	2.26	2.07	2.13	1.99	2.09
1.87	1.80	1.78	1.80	2.60	2.03	1.85	1.90	1.80	1.83
1.99	1.78	2.14	1.91	2.84	2.18	2.00	1.97	1.94	2.01
2.00	1.80	1.91	2.10	2.80	2.18	1.97	2.07	1.93	1.95
2.93	2.60	2.84	2.80	4.72	3.23	2.88	3.00	2.78	2.92
2.26	2.03	2.18	2.18	3.23	2.68	2.25	2.32	2.18	2.23
2.07	1.85	2.00	1.97	2.88	2.25	2.19	2.08	1.99	2.06
2.13	1.90	1.97	2.07	3.00	2.32	2.08	2.41	2.02	2.07
1.99	1.80	1.94	1.93	2.78	2.18	1.99	2.02	2.07	2.00
2.09	1.83	2.01	1.95	2.92	2.23	2.06	2.07	2.00	2.28

T SQUARE

18.86236983

TEST STATISTICS

1.862157362

Difference is Significant at $\alpha = 0.05$

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- Test	63.5	74.8	70.7	69.3	25.8	53.0	63.6	57.6	73.3	64.1
Post- Test	61.9	76.9	64.8	67.3	26.6	46.9	63.1	62.3	64.4	62.0

(D) Pre-DEP and Post-DEP Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- DEP	1.28	1.16	1.43	1.25	1.93	1.46	1.34	1.41	1.30	1.35
Post- DEP	1.33	1.14	1.31	1.27	2.02	1.50	1.30	1.37	1.23	1.34

Result of Multivariate T² Test (for scores):

N1 65
 N2 540
 COVARIANCE MATRIX
 1.99 1.58 1.82 1.74 2.72 2.06 1.82 1.88 1.73 1.88
 1.58 1.43 1.56 1.51 2.33 1.76 1.56 1.63 1.49 1.59
 1.82 1.56 2.01 1.71 2.75 2.06 1.82 1.86 1.70 1.88
 1.74 1.51 1.71 1.81 2.59 1.98 1.73 1.84 1.63 1.74
 2.72 2.33 2.75 2.59 4.63 3.13 2.69 2.84 2.53 2.75
 2.06 1.76 2.06 1.98 3.13 2.54 2.07 2.16 1.95 2.09
 1.82 1.56 1.82 1.73 2.69 2.07 1.94 1.86 1.73 1.86
 1.88 1.63 1.86 1.84 2.84 2.16 1.86 2.15 1.78 1.87
 1.73 1.49 1.70 1.63 2.53 1.95 1.73 1.78 1.72 1.76
 1.88 1.59 1.88 1.74 2.75 2.09 1.86 1.87 1.76 2.05
 T SQUARE
 10.28149863
 TEST STATISTICS
 1.012804343

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- DEP	73.1	83.6	60.3	77.9	34.3	55.9	69.1	61.8	71.6	67.6
Post- DEP	67.3	85.9	70.7	74.6	26.8	53.4	70.7	64.8	77.4	67.6

(E) DEP and Direct Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Direct	1.33	1.15	1.29	1.24	2.03	1.53	1.345	1.30	1.17	1.33
DEP	1.32	1.145	1.39	1.265	2.01	1.49	1.30	1.31	1.24	1.34

Result of Multivariate T² Test (for scores):

N1 105

N2 605

COVARIANCE MATRIX

1.99	1.58	1.81	1.73	2.72	2.06	1.83	1.88	1.71	1.88
1.58	1.44	1.55	1.50	2.33	1.77	1.56	1.63	1.47	1.59
1.81	1.55	1.99	1.69	2.75	2.05	1.82	1.86	1.68	1.87
1.73	1.50	1.69	1.80	2.59	1.98	1.72	1.84	1.62	1.74
2.72	2.33	2.75	2.59	4.63	3.13	2.70	2.84	2.51	2.75
2.06	1.77	2.05	1.98	3.13	2.56	2.09	2.17	1.94	2.09
1.83	1.56	1.82	1.72	2.70	2.09	1.95	1.86	1.72	1.87
1.88	1.63	1.86	1.84	2.84	2.17	1.86	2.16	1.77	1.87
1.71	1.47	1.68	1.62	2.51	1.94	1.72	1.77	1.69	1.74
1.88	1.59	1.87	1.74	2.75	2.09	1.87	1.87	1.74	2.04

T SQUARE

8.389493822

TEST STATISTICS

0.8282847714

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
DEP	67.9	85.6	69.6	74.9	27.6	53.7	70.5	64.4	76.8	67.7
Direct	68.6	84.8	72.4	77.1	25.7	48.6	66.7	64.8	82.9	66.7

APPENDIX 4.3B

Pairwise Comparisons of Perception of
Navy in Achieving Life Goals
for Females

Key to Tables Presented

TYP = 1. Pre-Recruiter
 2. Post-Recruiter
 3. Pre-Test
 4. Post-Test
 5. Pre-DEP
 6. Post-DEP
 7. Direct

NHELP = 1. Very Helpful
 2. Helpful
 3. Not Helpful

Pairwise Comparisons TYP = 1 vs 2
 2 vs 3
 3 vs 4
 5 vs 6
 5+6 vs 7

Life Goal 1 = Leadership

		NHLP1			ROW TOTAL
COUNT		1	2	3	
ROW %					
COL %					
TOT %					
1		60	63	9	132
		45.5	47.7	6.8	34.3
		29.4	37.7	64.3	
		15.6	16.4	2.3	
2		42	39	2	83
		50.6	47.7	2.4	21.6
		20.6	23.4	14.3	
		10.9	10.1	0.5	
3		25	27	1	53
		47.2	50.9	1.9	13.8
		12.3	16.2	7.1	
		6.5	7.0	0.3	
4		35	22	2	59
		59.3	37.3	3.4	15.3
		17.2	13.2	14.3	
		9.1	5.7	0.5	
5		8	3	0	11
		72.7	27.3	0.0	2.9
		3.9	1.0	0.0	
		2.1	0.8	0.0	
6		27	11	0	38
		71.1	20.9	0.0	9.9
		13.2	6.6	0.0	
		7.0	2.9	0.0	
7		7	2	0	9
		77.8	22.2	0.0	2.3
		3.4	1.2	0.0	
		1.8	0.5	0.0	
COLUMN TOTAL		204	167	14	385
		53.0	43.4	3.6	100.0

SQUARE = 18.50434 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.1012

Life Goal 2 = Skill or Trade

COUNT		NHLP2							
ROW	%							ROW TOTAL	
COL	%								
TOT	%	1		2		3			
-----		-----		-----		-----			
1		90	39	4				133	
		67.7	29.3	3.0				34.7	
		32.3	39.4	80.0					
		23.5	10.2	1.0					
-----		-----		-----		-----			
2		60	23	0				83	
		72.3	27.7	0.0				21.7	
		21.5	23.2	0.0					
		15.7	6.0	0.0					
-----		-----		-----		-----			
3		38	14	1				53	
		71.7	26.4	1.9				13.8	
		13.6	14.1	20.0					
		9.9	3.7	0.3					
-----		-----		-----		-----			
4		41	15	0				56	
		73.2	26.8	0.0				14.6	
		14.7	15.2	0.0					
		10.7	3.9	0.0					
-----		-----		-----		-----			
5		8	3	0				11	
		72.7	27.3	0.0				2.9	
		2.9	3.0	0.0					
		2.1	0.8	0.0					
-----		-----		-----		-----			
6		34	4	0				38	
		89.5	10.5	0.0				9.9	
		12.2	4.0	0.0					
		8.9	1.0	0.0					
-----		-----		-----		-----			
7		8	1	0				9	
		88.9	11.1	0.0				2.3	
		2.9	1.0	0.0					
		2.1	0.3	0.0					
-----		-----		-----		-----			
COLUMN		279	99	5				383	
TOTAL		72.8	25.8	1.3				100.0	

SQUARE = 12.89848 WITH 12 DEGREES OF FREEDOM. SIGNIFICANCE = 0.3765

Life Goal 3 = Travel

		NHLP3				
COUNT		1	2	3		
ROW %						ROW TOTAL
COL %						
TOT %						

1	89	39	5			133
	66.9	29.3	3.8			34.7
	34.1	34.5	55.6			
	23.2	10.2	1.3			

2	57	25	1			83
	68.7	30.1	1.2			21.7
	21.8	22.1	11.1			
	14.9	6.5	0.3			

3	40	12	1			53
	75.5	22.6	1.9			13.8
	15.3	10.6	11.1			
	10.4	3.1	0.3			

4	36	19	1			56
	64.3	33.9	1.8			14.6
	13.8	16.8	11.1			
	9.4	5.0	0.3			

5	7	4	0			11
	63.6	36.4	0.0			2.9
	2.7	3.5	0.0			
	1.8	1.0	0.0			

6	26	11	1			38
	68.4	28.9	2.6			9.9
	10.0	9.7	11.1			
	6.8	2.9	0.3			

7	6	3	0			9
	66.7	33.3	0.0			2.3
	2.3	2.7	0.0			
	1.6	0.8	0.0			

COLUMN TOTAL	261	113	9			383
	68.1	29.5	2.3			100.0

CHI SQUARE = 4.25735 WITH 12 DEGREES OF FREEDOM. SIGNIFICANCE = 0.9783

Life Goal 4 - Job Security

		NHLPs			ROW TOTAL
COUNT		1	2	3	
ROW %					
COL %					
TOT %					
1		87	42	4	133
		65.4	31.6	3.0	34.8
		33.5	36.5	57.1	
		22.8	11.0	1.0	
2		56	26	1	83
		67.5	31.3	1.2	21.7
		21.5	22.6	14.3	
		14.7	6.8	0.3	
3		28	24	1	53
		52.8	45.3	1.9	13.9
		10.8	20.9	14.3	
		7.3	6.3	0.3	
4		43	11	1	55
		78.2	20.0	1.8	14.4
		16.5	9.6	14.3	
		11.3	2.9	0.3	
5		8	3	0	11
		72.7	27.3	0.0	2.9
		3.1	2.6	0.0	
		2.1	0.8	0.0	
6		32	6	0	38
		84.2	15.8	0.0	9.9
		12.3	5.2	0.0	
		8.4	1.6	0.0	
7		6	3	0	9
		66.7	33.3	0.0	2.4
		2.3	2.6	0.0	
		1.6	0.8	0.0	
COLUMN TOTAL		260	115	7	382
		68.1	30.1	1.8	100.0

SQUAPE = 15.21912 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.2297

Life Goal 5 = Good Time

		NHELPS			ROW TOTAL
COUNT		1	2	3	
ROW					
COL					
TOT					
1		25	67	41	133
		18.8	50.4	30.8	34.8
		41.0	34.9	31.8	
		6.5	17.5	10.7	
2		15	38	30	83
		18.1	45.8	36.1	21.7
		24.6	19.8	23.3	
		3.9	9.9	7.9	
3		5	28	20	53
		9.4	52.8	37.7	13.9
		8.2	14.6	15.5	
		1.3	7.3	5.2	
4		9	29	17	55
		16.4	52.7	30.9	14.4
		14.8	15.1	13.2	
		2.4	7.6	4.5	
5		8	8	3	11
		0.0	72.7	27.3	2.9
		0.0	4.2	2.3	
		0.0	2.1	0.8	
6		6	18	14	38
		15.8	47.8	36.8	9.9
		9.8	9.4	10.9	
		1.6	4.7	3.7	
7		1	4	4	9
		11.1	44.4	44.4	2.4
		1.6	2.1	3.1	
		0.3	1.0	1.0	
COLUMN TOTAL		61	192	129	382
		16.0	50.3	33.8	100.0

SQUAPE = 7.31258 WITH 12 DEGREES OF FREEDOM. SIGNIFICANCE = 7.8363

Life Goal 6 - Nice People to Work With

COUNT		NHHELP			ROW TOTAL
ROW	COL	1	2	3	
TOT					
1		55	68	10	133
		41.4	51.1	7.5	34.7
		30.7	36.4	58.8	
		14.4	17.8	2.6	
2		36	45	2	83
		43.4	54.2	2.4	21.7
		20.1	24.1	11.8	
		9.4	11.7	0.5	
3		22	29	2	53
		41.5	54.7	3.8	13.8
		12.3	15.5	11.8	
		5.7	7.6	0.5	
4		31	24	1	56
		55.4	42.9	1.8	14.6
		17.3	12.8	5.9	
		8.1	6.3	0.3	
5		8	3	0	11
		72.7	27.3	0.0	2.9
		4.5	1.6	0.0	
		2.1	0.8	0.0	
6		22	14	2	38
		57.9	36.8	5.3	9.9
		12.3	7.5	11.8	
		5.7	3.7	0.5	
7		5	4	0	9
		55.6	44.4	0.0	2.3
		2.8	2.1	0.0	
		1.3	1.0	0.0	
COLUMN TOTAL		179	187	17	383
		46.7	48.8	4.4	100.0

SQUAPE = 14.18254 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.2943

Life Goal 7 = Challenging Job

NHLP7									
COUNT	1	2	3	ROW TOTAL					
ROW %	1	2	3						
COL %	1	2	3						
TOT %	1	2	3						
1	82	46	5	133					
	61.7	34.6	3.8	34.8					
	33.9	35.7	45.5						
	21.5	12.8	1.3						
2	42	38	2	82					
	51.2	46.3	2.4	21.5					
	17.4	29.5	18.2						
	11.0	9.9	0.5						
3	34	17	2	53					
	64.2	32.1	3.8	13.9					
	14.0	13.2	18.2						
	8.9	4.5	0.5						
4	37	17	2	56					
	66.1	38.4	3.6	14.7					
	15.3	13.2	18.2						
	9.7	4.5	0.5						
5	9	2	0	11					
	81.8	18.2	0.0	2.9					
	3.7	1.6	0.0						
	2.4	0.5	0.0						
6	30	8	0	38					
	78.9	21.1	0.0	9.9					
	12.4	6.2	0.0						
	7.9	2.1	0.0						
7	8	1	0	9					
	88.9	11.1	0.0	2.4					
	3.3	0.0	0.0						
	2.1	0.3	0.0						
COLUMN TOTAL	242	129	11	382					
TOTAL	63.4	33.8	2.9	100.0					

SQUARE = 15.41805 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 2.2193

Life Goal 8 - Good Pay

		NHLP8			ROW TOTAL
COUNT		1	2	3	
ROW					
COL					
TOT					
1		62	64	7	133
		46.6	48.1	5.3	34.9
		30.4	39.5	46.7	
		16.3	16.8	1.8	
2		40	41	1	82
		48.8	50.0	1.2	21.5
		19.6	25.3	6.7	
		10.5	10.8	0.3	
3		26	24	2	52
		50.0	44.2	3.8	13.6
		12.7	14.8	13.3	
		6.8	6.3	0.5	
4		41	13	2	56
		73.2	23.2	3.6	14.7
		20.1	8.0	13.3	
		10.8	3.4	0.5	
5		7	2	2	11
		63.6	10.2	10.2	2.9
		3.4	1.2	13.3	
		1.8	0.5	0.5	
6		23	14	1	38
		60.5	36.8	2.6	10.0
		11.3	8.6	6.7	
		6.0	3.7	0.3	
7		5	4	0	9
		55.6	44.4	0.0	7.4
		2.5	2.5	0.0	
		1.3	1.0	0.0	
COLUMN TOTAL		204	162	15	381
		53.5	42.5	3.9	100.0

SQUARE = 23.54958 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.0233

Life Goal 9 - Self Development

NHLP9				
COUNT	1	2	3	
ROW %				ROW
COL %				TOTAL
TOT %	1	2	3	
1	88	42	3	133
	66.2	31.6	2.3	34.8
	31.9	41.6	60.0	
	23.0	11.0	0.0	
2	55	27	0	82
	67.1	32.9	0.0	21.5
	19.9	26.7	0.0	
	14.4	7.1	0.0	
3	37	14	2	53
	69.8	26.4	3.0	13.9
	13.4	13.9	42.0	
	9.7	3.7	0.5	
4	44	12	0	56
	78.6	21.4	0.0	14.7
	15.9	11.9	0.0	
	11.5	3.1	0.0	
5	10	1	0	11
	90.9	9.1	0.0	2.9
	3.6	1.0	0.0	
	2.6	0.3	0.0	
6	34	4	0	38
	89.5	10.5	0.0	9.9
	12.3	4.0	0.0	
	8.9	1.0	2.0	
7	8	1	0	9
	88.9	11.1	0.0	2.4
	2.9	1.0	0.0	
	2.1	0.3	0.0	
COLUMN	276	101	5	382
TOTAL	72.3	26.4	1.3	100.0

SQUARE = 1A.54738 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = P.2995

Life Goal 10 = Serve Country

COUNT		NHLP10			ROW TOTAL
ROW	X	1	2	3	
COL	X				
TOT	X				
1		90	38	5	133
		67.7	28.6	3.8	34.8
		35.4	33.9	31.3	
		23.6	9.9	1.3	
2		50	29	3	82
		61.0	35.4	3.7	21.5
		19.7	25.9	18.8	
		13.1	7.6	0.8	
3		40	10	3	53
		75.5	18.9	5.7	13.9
		15.7	8.9	18.8	
		10.5	2.6	0.8	
4		33	10	5	56
		58.9	32.1	8.9	14.7
		13.0	16.1	31.3	
		8.6	4.7	1.3	
5		8	3	0	11
		72.7	27.3	0.0	2.9
		3.1	2.7	0.0	
		2.1	0.8	0.0	
6		28	10	0	38
		73.7	26.3	0.0	9.9
		11.0	8.9	0.0	
		7.3	2.6	0.0	
7		5	4	0	9
		55.6	44.4	0.0	2.4
		2.0	3.6	0.0	
		1.3	1.0	0.0	
COLUMN TOTAL		258	112	16	382
		66.5	29.3	4.2	100.0

WARE = 11.87900 WITH 12 DEGREES OF FREEDOM, SIGNIFICANCE = 0.4550

(A) Pre-Recruiter and Post-Recruiter Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre-Re- cruiter	1.61	1.35	1.37	1.38	2.12	1.66	1.42	1.59	1.36	1.36
Post-Re- cruiter	1.52	1.28	1.325	1.34	2.18	1.59	1.51	1.52	1.33	1.43

Result of Multivariate T² Test (using scores):

N1 132

N2 82

COVARIANCE MATRIX

2.85	2.24	2.26	2.33	3.49	2.74	2.45	2.65	2.26	2.34
2.24	2.02	1.93	1.94	2.89	2.29	2.08	2.22	1.94	1.97
2.26	1.93	2.13	1.93	3.00	2.32	2.09	2.23	1.92	2.02
2.33	1.94	1.93	2.16	3.05	2.39	2.09	2.32	1.96	1.99
3.49	2.89	3.00	3.05	5.15	3.69	3.22	3.48	2.96	3.09
2.74	2.29	2.32	2.39	3.69	3.05	2.55	2.71	2.34	2.39
2.45	2.08	2.09	2.09	3.22	2.55	2.45	2.42	2.13	2.18
2.65	2.22	2.23	2.32	3.48	2.71	2.42	2.80	2.25	2.26
2.26	1.94	1.92	1.96	2.96	2.34	2.13	2.25	2.08	1.99
2.34	1.97	2.02	1.99	3.09	2.39	2.18	2.26	1.99	2.26

T SQUARE

10.31226871

TEST STATISTICS

0.9874483714

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre-Re- cruiter	45.5	67.7	66.9	65.4	18.8	41.4	61.7	46.6	66.2	67.7
Post-Re- cruiter	50.6	72.3	68.7	67.5	18.1	43.4	51.2	48.8	67.1	61.0

(B) Post-Recruiter and Pre-Test Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Post Re- cruiter	1.52	1.28	1.325	1.34	2.18	1.59	1.51	1.52	1.33	1.43
Pre- Test	1.55	1.30	1.26	1.49	2.28	1.62	1.40	1.54	1.34	1.30

Result of Multivariate T² Test (for scores):

N1 82

N2 52

COVARIANCE MATRIX

2.65	2.10	2.08	2.29	3.45	2.59	2.42	2.48	2.16	2.27
2.10	1.92	1.82	1.92	2.93	2.18	2.05	2.11	1.88	1.95
2.08	1.82	1.98	1.91	3.02	2.22	2.04	2.14	1.83	1.95
2.29	1.92	1.91	2.25	3.21	2.42	2.20	2.33	1.98	2.05
3.45	2.93	3.02	3.21	5.50	3.74	3.37	3.56	3.02	3.17
2.59	2.18	2.22	2.42	3.74	2.92	2.55	2.66	2.26	2.36
2.42	2.05	2.04	2.20	3.37	2.55	2.51	2.45	2.16	2.24
2.48	2.11	2.14	2.33	3.56	2.66	2.45	2.67	2.18	2.27
2.16	1.88	1.83	1.98	3.02	2.26	2.16	2.18	2.05	2.00
2.27	1.95	1.95	2.05	3.17	2.36	2.24	2.27	2.00	2.27

T SQUARE

8.406929142

TEST STATISTICS

0.7833729428

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Post-Re- cruiter	50.6	72.3	68.7	67.5	18.1	43.4	51.2	48.8	67.1	61.0
Pre- Test	47.2	71.7	75.5	52.8	9.4	41.5	64.2	50.0	69.8	75.5

(C) Pre-Test and Post-Test Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- Test	1.55	1.30	1.26	1.49	2.28	1.62	1.40	1.54	1.34	1.30
Post- Test	1.44	1.27	1.375	1.24	2.145	1.47	1.38	1.30	1.21	1.50

Result of Multivariate T² Test (for scores):

N1 52

N2 54

COVARIANCE MATRIX

2.53	2.04	2.05	2.15	3.33	2.38	2.22	2.22	2.04	2.26
2.04	1.90	1.82	1.86	2.88	2.08	1.95	1.94	1.80	1.95
2.05	1.82	1.99	1.88	3.02	2.14	1.95	1.98	1.79	1.97
2.15	1.86	1.88	2.15	3.06	2.23	2.01	2.09	1.86	2.07
3.33	2.88	3.02	3.06	5.45	3.52	3.13	3.19	2.87	3.18
2.38	2.08	2.14	2.23	3.52	2.67	2.28	2.34	2.09	2.29
2.22	1.95	1.95	2.01	3.13	2.28	2.23	2.13	1.97	2.16
2.22	1.94	1.98	2.09	3.19	2.34	2.13	2.29	1.96	2.11
2.04	1.80	1.79	1.86	2.87	2.09	1.97	1.96	1.87	1.95
2.26	1.95	1.97	2.07	3.18	2.29	2.16	2.11	1.95	2.37

T SQUARE

20.86737071

TEST STATISTICS

1.906154055

Difference significant at = 0.1 level

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- Test	47.2	71.7	75.5	52.8	9.4	41.5	64.2	50.0	69.8	75.5
Post- Test	59.3	73.2	64.3	78.2	16.4	55.4	66.1	73.2	78.6	58.9

(D) Pre-DEP and Post-DEP Comparison

Summary of Mean Scores

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- DEP	1.27	1.27	1.36	1.27	2.27	1.27	1.18	1.55	1.09	1.27
Post- DEP	1.29	1.105	1.34	1.16	2.21	1.47	1.21	1.42	1.105	1.26

Result of Multivariate T² Test (for scores):

N1 11

N2 38

COVARIANCE MATRIX

1.94	1.60	1.89	1.66	2.98	2.00	1.66	2.06	1.53	1.79
1.60	1.49	1.64	1.51	2.64	1.74	1.47	1.77	1.36	1.60
1.89	1.64	2.17	1.68	3.23	2.02	1.74	2.06	1.60	1.83
1.66	1.51	1.68	1.62	2.72	1.81	1.53	1.87	1.40	1.64
2.98	2.64	3.23	2.72	5.60	3.36	2.79	3.43	2.55	2.91
2.00	1.74	2.02	1.81	3.36	2.47	1.87	2.19	1.70	1.96
1.66	1.47	1.74	1.53	2.79	1.87	1.68	1.85	1.43	1.68
2.06	1.77	2.06	1.87	3.43	2.19	1.85	2.57	1.68	1.96
1.53	1.36	1.60	1.40	2.55	1.70	1.43	1.68	1.36	1.53
1.79	1.60	1.83	1.64	2.91	1.96	1.68	1.96	1.53	1.87

T SQUARE

4.277191575

TEST STATISTICS

0.3458154891

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader- ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng- ing	Good Pay	Develop ment	Serve Country
Pre- DEP	72.7	72.7	63.6	72.7	.0	72.7	81.8	63.6	90.9	72.7
Post- DEP	71.1	89.5	68.4	84.2	15.8	57.9	78.9	60.5	89.5	73.7

(E) DEP and Direct Comparison

Summary of Mean Scores

	Leader-ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng-ing	Good Pay	Develop-ment	Serve Country
Direct	1.22	1.11	1.33	1.33	2.33	1.44	1.11	1.44	1.11	1.44
DEP	1.29	1.14	1.35	1.18	2.22	1.43	1.20	1.45	1.10	1.265

Result of Multivariate T² Test (for scores):

N1 9
N2 49

COVARIANCE MATRIX

1.89	1.57	1.88	1.68	2.96	1.98	1.63	2.04	1.52	1.80
1.57	1.46	1.63	1.52	2.63	1.73	1.45	1.75	1.36	1.61
1.88	1.63	2.14	1.73	3.23	2.04	1.71	2.07	1.59	1.88
1.68	1.52	1.73	1.68	2.80	1.86	1.54	1.91	1.43	1.71
2.96	2.63	3.23	2.80	5.64	3.38	2.75	3.43	2.55	3.00
1.98	1.73	2.04	1.86	3.38	2.45	1.84	2.20	1.70	2.02
1.63	1.45	1.71	1.54	2.75	1.84	1.63	1.82	1.41	1.68
2.04	1.75	2.07	1.91	3.43	2.20	1.82	2.54	1.68	2.00
1.52	1.36	1.59	1.43	2.55	1.70	1.41	1.68	1.36	1.55
1.80	1.61	1.88	1.71	3.00	2.02	1.68	2.00	1.55	1.95

T SQUARE

6.035904891

TEST STATISTICS

0.5065848748

Difference is not significant

Summary: Percentage Considering Navy Very Helpful in Respective Goals

	Leader-ship	Trade Skill	Travel	Security	Good Time	Nice People	Challeng-ing	Good Pay	Develop-ment	Serve Country
DEP	77.8	88.9	66.7	66.7	11.1	55.6	88.9	55.6	88.9	55.6
Direct	71.4	85.7	67.3	81.6	12.2	61.2	79.6	61.2	89.8	73.5

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